

MassCAR Guidance Document

*Massachusetts Clean Auto Repair Program in partnership with the Massachusetts Office of
Technical Assistance (OTA)*



Acknowledgments & History

This guidance began as an update of the publication known as the CRASH Course, (Collision Repair Auto Shop Help), which was the first attempt by the state to produce a clear and easy-to-follow summary of environmental, health, and safety (EHS) rules and best practices for auto body shops. The CRASH Course was well-received and widely-used. Its intent was to help keep facilities in compliance with the law, help them reduce unnecessary costs, liabilities, exposures and releases, and find ways to improve operations. With funding from the EPA, the [Massachusetts Office of Technical Assistance](#) (OTA), which provides free and confidential environmental and sustainability assistance to Massachusetts businesses, decided to update its CRASH Course guidance to include auto repair shops. The updated training material is called the Massachusetts Clean Auto Repair (MassCAR) Guidance.

In publishing this guidance, OTA hopes to stimulate ongoing discussion so that this MassCAR Guidance will be a living document that prompts continuing engagement that will evolve and improve over time. To that end, OTA has formed the Massachusetts Clean Auto Repair (MassCAR) Partnership and we invite all interested parties to join. There is no fee or formal process to join. MassCAR Partnership solely requires participating in the effort to improve the guidance and / or adopt greener practices in your shop.

We encourage the continuing submission of information and questions about how to do auto repair or body work in the safest manner. Please email Tiffany.Skogstrom@state.ma.us or Marina.Gayl@state.ma.us, or call OTA at 617-626-1060 to submit comments or request a [free and confidential site visit](#). OTA's services include helping you know whether you are in compliance with relevant requirements.

Companies following the practices in the CRASH Course were often considered as operating with good faith, and the intent of this guidance is similar. The MassCAR Guidance includes a checklist that you can use not only to ensure that important actions are identified and carried out, but also constitutes documentation of your efforts to do the right thing. There is a downloadable 'Environmental Achievement Statement' that you can print out and display in your shop to show customers your responsible actions and goals.

We thank the following organizations, shops, and people who have already joined the MassCAR Partnership and have contributed so much to making this document possible, and, we hope, useful to you:

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Organization of this Guidance

The Massachusetts Clean Auto Repair (MassCAR) Guidance was developed for auto body and repair shops. This guide will help you:

- Understand and achieve compliance with environmental, health and safety (EHS) requirements.
- Learn about and implement pollution prevention and other best management practices.

This manual is broken into three parts.

- The **MassCAR checklist** is a summary of actions you can take to ensure that requirements are followed and show your shop's good faith efforts to stay in compliance while protecting your workers and the environment.
- The **MassCAR fact sheets** include detailed information about key auto body and repair topics identified by the project partners. These fact sheets are intended to provide you with more information, benefits, possible obstacles, and steps forward for implementing each topic outlined on the fact sheet.
- The **MassCAR Environmental Achievement Statement** is a downloadable self-certification document that you can use to advertise and celebrate your environmental practices. Shops that provide feedback or participate in trainings will receive a MassCAR certificate to acknowledge their efforts and contributions to this program and the environment.

EHS requirements are designed to help protect our land, water, and air quality, as well as the health and safety of everyone in and around your shop. By complying with these requirements, you can help protect your shop from severe penalties, legal liabilities, and lost labor hours associated with worker injuries. If you take the additional steps to prevent pollution and operate your shop according to the best management practices, as described in this manual, you can help reduce your operating costs by cutting down on the use of hazardous materials and the generation of waste.

Overview

Use this checklist to evaluate, improve, and document your compliance and implementation of best practices. Doing so will help you demonstrate your efforts to comply and improve the environmental, health and safety standards of your shop.

Basic federal, state, and local requirements are marked with a ✓ and are in **bold**.

This checklist is not a comprehensive list of all requirements, so by checking each box, it does NOT guarantee that you are in compliance with every possible requirement.

We suggest you print the checklist and date it. This will demonstrate to an inspector that you are actively engaged in ensuring compliance. It is a good idea to keep your printed checklists from the past three years to demonstrate ongoing compliance efforts.

An inspector will want to look at actual practice. We suggest that you view the checklist the same way – as an indicator of good faith, the proof of which is on the shop floor. If you are not in full compliance, you should document your efforts – including instructions and schedules – for remedying any problems. This guidance includes beyond compliance actions, because such actions demonstrate a good faith effort to reduce environmental, health and safety problems, make good business sense, protect workers and the environment, and are responsive to the preferences of many customers.

If you wish to print out a customized “Environmental Achievements” statement for customers to see, (at the end of the checklist), fill in the personalized information with some actions you would like to put on display, and then print it out to put up in your shop.

Date _____

Permits

See the "Permits and Inspection Readiness" fact sheet for more information about the following items.

1)	<input type="checkbox"/> ✓ We have an Occupancy Permit from the local Code Enforcement Agency.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
2)	<input type="checkbox"/> ✓ We have all required permits from the local Fire Department. These will generally include a Flammable Storage Permit, Vehicle Storage Permit, and may include other permits as well.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
3)	<input type="checkbox"/> ✓ We do not store vehicles outdoors at our shop for more than 30 days OR (if we do) we have a valid Use of Premises Permit from our local Code Enforcement Agency.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
4)	<input type="checkbox"/> ✓ We are registered as an auto body repair business with the local City or Town hall.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
5)	<input type="checkbox"/> ✓ We are registered as a Motor Vehicle Damage Repair Shop with the State Division of Standards (commonly known as "RS#").
	<input type="checkbox"/> <i>Action needed (describe below)</i>

6)	<input type="checkbox"/> ✓ We have underground storage tanks and they are registered with the local FD and MassDEP.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
<p><u>MassDEP Painting and EPA NESHAP 6H Rule</u> <i>Applicable to BODY SHOPS only. Skip this section if you do not do body and paint work. See the "Spray Painting Regulations" fact sheet for more information about how to comply with the items below.</i></p>	
7)	<input type="checkbox"/> ✓ At least one of the following is true (check any that are applicable) <ul style="list-style-type: none"> <input type="checkbox"/> We use less than 670 gallons per month of VOC-containing materials (emit less than 2.5 tons per month). <input type="checkbox"/> We use less than 2,000 gallons per 12-month rolling period of any organic material (including VOC and non-VOC). <input type="checkbox"/> We emit less than 10 tons of organic material for the same purpose. <input type="checkbox"/> We have a MassDEP Air Permit and comply with all of its requirements.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
8)	<input type="checkbox"/> ✓ We apply all coatings with HVLP, electrostatic, airless or air-assisted airless spray guns, or an equivalent technology.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
9)	<input type="checkbox"/> ✓ We perform all spray gun cleaning to prevent the creation of atomized mist of cleaning solvent by using a fully enclosed gun washer that re-circulates and collects used solvent.
	<input type="checkbox"/> <i>Action needed (describe below)</i>

10)	<input type="checkbox"/> ✓ We keep monthly purchase records of coating and surface preparation products for the last 12 months.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
11)	<input type="checkbox"/> ✓ We work with our paint supplier to properly track and comply with Massachusetts and EPA limits for volatile organic compound (VOC) concentrations.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
12)	<input type="checkbox"/> ✓ All of our spray booths are equipped with filters totaling at least two inches thick with at least 98% collection efficiency for paint overspray AND all of our spray booths exhaust through a vertical stack(s) that extend 10 feet above the roof line (see #60).
	<input type="checkbox"/> <i>Action needed (describe below)</i>
13)	<input type="checkbox"/> ✓ Our spray booths used for complete vehicles are fully enclosed, ventilated, and operate at negative pressure or up to 0.05 inches water gauge positive pressure. These booths have seals on all doors and other openings and an automatic pressure balancing system.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
14)	<input type="checkbox"/> ✓ Our spray booths used for miscellaneous parts or subassemblies have a full roof, at least 3 complete walls or complete side curtains, and are ventilated to draw air into the booth.
	<input type="checkbox"/> <i>Action needed (describe below)</i>

15)	<input type="checkbox"/> ✓ All of our painters have been trained and certified for the EPA NESHAP 6H rule within the past five years. This training educates surface coating operations technicians on spray gun equipment selection, spray techniques, maintenance, and environmental compliance.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
16)	<input type="checkbox"/> ✓ We have contacted our paint manufacturer to request a list of paints that are regulated by US EPA's NESHAP 6H regulation. If you do use regulated coatings, you must notify the US EPA using this form. If you do not use these products, you can file for an exemption.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
17)	<input type="checkbox"/> We use waterborne paints.
18)	<input type="checkbox"/> We use vacuum sanders or perform sanding in prep decks or other areas with local exhaust ventilation to capture sanding dusts.

Industrial Wastewater (IWW) Discharge

See the "Wastewater Regulations and Best Practices" fact sheet for more information about complying with the items below.

19)	<input type="checkbox"/> ✓ We do NOT discharge industrial wastewater into any of the following: <ol style="list-style-type: none">1. A septic system2. A drinking water supply3. Surface water (unless we have an NPDES permit)4. Groundwater or ground surface (unless we have a groundwater discharge permit or an Underground Injection Control well registration from MassDEP) <p>If 19) is checked. We discharge water to (check one):</p> <ul style="list-style-type: none"><input type="checkbox"/> Sewer (and we meet local requirements – usually requiring an oil/water separator)<input type="checkbox"/> Holding Tank (and we submitted compliance certification to MassDEP)<input type="checkbox"/> Surface Water (and we have an NPDES permit)<input type="checkbox"/> Groundwater or ground surface (and we have a MassDEP Groundwater Discharge Permit or UIC registration)
	<input type="checkbox"/> <i>Action needed (describe below)</i>
20)	<input type="checkbox"/> Our shop has an oil/water separator. This is required in some circumstances (e.g., to fulfill your NPDES or other permit requirements).
21)	<input type="checkbox"/> We educate our employees on the importance of avoiding surface water and groundwater pollution.

22) ☐ We do not wash vehicles on the premises.

OR, if we do, we do the following:

- ☐ Before washing vehicles, we sweep the vehicle washing area.
- ☐ We check vehicles for fluid leaks before washing them.
- ☐ We contain and collect leaked fluids from underneath vehicles before washing them.
- ☐ We use phosphate-free, biodegradable soaps and detergents for washing vehicles.
- ☐ We use phosphate-based soaps for whitewalls and special uses only.
- ☐ We minimize the amount of water used.
- ☐ If we wash vehicles outdoors, we use berms to collect wastewater, and run the wastewater through an oil-water separator to remove oil and grit before discharging it.
- ☐ If we wash vehicles outdoors, we wash vehicles away from ground that is not covered by concrete or other impermeable surfaces.
- ☐ If we wash vehicles outdoors, we wash vehicles away from storm drains that do not flow into our oil-water separator.

Hazardous Waste Identification

See the "Hazardous Waste Management" and "Waste Oil Management" fact sheets for more information about how to comply with the items below.

23) ☐ **✓ We know our hazardous waste generator status (mark correct box below).**

- ☐ Very Small Quantity Generator (VSQG): generate between 0 and 26 gallons of hazardous waste per month and/or no acutely hazardous waste per month
- ☐ Small Quantity Generator (SQG): generate between 27 and 270 gallons of hazardous waste per month and/ or less than 2.2 lbs of acutely hazardous waste per month.
- ☐ Large Quantity Generator (LQG): generate more than 270 gallons of hazardous waste per month and/or 2.2 or more lbs of acutely hazardous waste per month.

☐ *Action needed (describe below)*

24)	<input type="checkbox"/> ✓ We know our waste oil generator status (mark correct box below). <input type="checkbox"/> Very Small Quantity Generator (VSQG): generate between 0 and 26 gallons of waste oil per month <input type="checkbox"/> Small Quantity Generator (SQG): generate between 27 and 270 gallons of waste oil per month. <input type="checkbox"/> Large Quantity Generator (LQG): generate more than 270 gallons of waste oil per month.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
25)	<input type="checkbox"/> ✓ We meet the maximum allowed storage/accumulation quantity according to our generator status, which are as follows: <input type="checkbox"/> Very Small Quantity Generator (VSQG): five drums at one time with no storage/accumulation time limit. <input type="checkbox"/> Small Quantity Generator (SQG): quantity limit of approximately thirty (30) drums [less than 13,230 pounds (lbs)] and time limit of 180 days. <input type="checkbox"/> Large Quantity Generator (LQG): no quantity limit and time limit of 90 days
	<input type="checkbox"/> <i>Action needed (describe below)</i>
26)	<input type="checkbox"/> ✓ We have a permanent twelve-digit EPA generator identification (ID) number (can be alphanumeric) for the generation of hazardous waste.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
27)	<input type="checkbox"/> ✓ We have notified MassDEP of hazardous waste and/or waste oil activity.
	<input type="checkbox"/> <i>Action needed (describe below)</i>

28)	<input type="checkbox"/> ✓ We are able to document that all wastes that are managed as non-hazardous are properly classified (e.g., if we handle booth filters as non-hazardous, they have been tested as such or we have other documentation to support this designation).
	<input type="checkbox"/> <i>Action needed (describe below)</i>
Hazardous Waste Storage/Accumulation (S/A) <i>See the "Hazardous Waste Management" and "Waste Oil Management" fact sheets for more information about how to comply with the items below.</i>	
29)	<input type="checkbox"/> ✓ We have a designated hazardous waste S/A area.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
30)	<input type="checkbox"/> ✓ We store our non-hazardous waste materials and all other materials separately from hazardous waste.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
31)	<input type="checkbox"/> ✓ We clearly label our hazardous waste S/A area with a sign with letters that are at least one inch high that says "Hazardous Waste."
	<input type="checkbox"/> <i>Action needed (describe below)</i>
32)	<input type="checkbox"/> ✓ We clearly mark and distinguish the boundaries of the S/A area from other areas with, for instance, a yellow line or chain.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
33)	<input type="checkbox"/> ✓ The floor of our hazardous waste S/A area is impervious to leaks, without any cracks, openings, or drains.
	<input type="checkbox"/> <i>Action needed (describe below)</i>

34)	<input type="checkbox"/> ✓ We do not have the S/A area outdoors, OR (if it is outdoors), there is adequate secondary containment that would collect spills of liquid materials.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
35)	<input type="checkbox"/> ✓ We do not have the S/A area outdoors, OR (if it is outdoors), our outside hazardous waste S/A area is secured against trespassers.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
36)	<input type="checkbox"/> We employ the following best practices to minimize our hazardous waste accumulation: <ul style="list-style-type: none"> <input type="checkbox"/> We use an oil filter crusher and recycle our oil filters. <input type="checkbox"/> We recycle antifreeze. <input type="checkbox"/> We use adhesive or lead-free wheel weights and recycle all wheel weights that enter our shop. <input type="checkbox"/> We use aqueous brake cleaner. <input type="checkbox"/> We use aqueous parts cleaner. <input type="checkbox"/> We use an aqueous gun washer. <input type="checkbox"/> We have switched to less toxic cleaner for surface preparation. <input type="checkbox"/> We use a solvent recycler.
Hazardous Waste Container Management	
37)	<input type="checkbox"/> ✓ We properly label all containers of hazardous and non-hazardous waste with the words "Hazardous Waste" or "Non-Hazardous Waste," the name of the waste, the type of hazard, if we are an SQG or LQG, and the date storage began.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
38)	<input type="checkbox"/> ✓ We properly close all containers of hazardous waste to avoid spilling or evaporation into the air, and we do not leave our containers open to the air (except when filling).
	<input type="checkbox"/> <i>Action needed (describe below)</i>

39)	<input type="checkbox"/> ✓ All of our containers of hazardous waste are in good condition (not dented, rusted, cracked, or opened).
	<input type="checkbox"/> <i>Action needed (describe below)</i>
<p>Hazardous Waste Documentation and Transport</p> <p><i>See the "Hazardous Waste Management" fact sheet for more information about how to comply with the items below.</i></p>	
40)	<input type="checkbox"/> ✓ We are either: 1. a VSQG and we do not self-transport hazardous waste (check box to left and skip boxes below), 2. an SQG or LQG (check box to left and skip boxes below), or 3. a VSQG, we self-transport hazardous waste, and we comply with all of the boxes below.
	<input type="checkbox"/> We maintain a list of the waste type, waste quantity, date of waste transport, and date of waste treatment or disposal. <input type="checkbox"/> We document where our waste is taken to (any and all locations). <input type="checkbox"/> We get and keep proofs of receipt from the facility that accepts our waste.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
41)	<input type="checkbox"/> ✓ We either: 1. only self-transport our hazardous waste (check box to left and skip boxes below) or 2. have someone else transport our hazardous waste and comply with all of the boxes below.
	<input type="checkbox"/> We have hazardous waste manifests completely filled out and distributed. <input type="checkbox"/> We keep our hazardous waste manifests for at least three years. <input type="checkbox"/> We use licensed hazardous waste transporters.
	<input type="checkbox"/> <i>Action needed (describe below)</i>

42)	<input type="checkbox"/> ✓ We label our hazardous waste containers for transport with the words “Hazardous Waste,” the name of the waste, the type of hazardous waste (such as reactive, corrosive, toxic, etc.), and our name, address, and generator ID number.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
<p align="center">Aboveground and Underground Storage Tanks</p>	
43)	<input type="checkbox"/> ✓ We do not have an aboveground storage tank (AST) OR (if we do), we comply with all of the boxes below. <input type="checkbox"/> We have documents of our AST capacity. <input type="checkbox"/> We have documents of the date of the AST installation. <input type="checkbox"/> We know the type of waste stored in the AST. <input type="checkbox"/> Our AST and its containment meet the hazardous waste storage/accumulation requirements of items 29) to 39).
	<input type="checkbox"/> <i>Action needed (describe below)</i>

44)

- ☐ ✓ We do not have an underground storage tank OR (if we do have one), all of the following are true (many of these are [based on a new January, 2015 rule](#)):
- ☐ As of January, 2015, all new and replacement USTs and associated piping are double-walled, and we will ensure all single-walled steel tanks are removed by August 17, 2017.
 - ☐ If we have had a UST replaced (also check box if you haven't had one replaced) after January 2, 2015, we have UST system installations, including installers' certifications, manufacturers' specifications and checklists, records of all testing results and inspections conducted during installation, and it was inspected by the UST system designer or the designer's designee before the excavation is backfilled. We have also registered the new UST with MassDEP within 30 days of the UST system's receipt of regulated substance.
 - ☐ Our UST is inspected every three years by a Third Party Inspector and the Inspector's report is submitted to MassDEP.
 - ☐ We submit a compliance certification for our UST system every three years (18 months from the last TPI)
 - ☐ Our UST system has equipment in place for early detection of leaks and to prevent the release of regulated substances.
 - ☐ We have pressurized piping installed before May 28, 1999 and will ensure that an automatic line leak detector is installed by January 2, 2016. (Pressurized piping installed on or after 5/28/1999 is already required to have an ALLD installed.)
 - ☐ We have already or will ensure that a submersible sump is installed by January 1, 2019.
 - ☐ We have installed a 5-gallon spill bucket.
 - ☐ We can demonstrate financial assurance for the clean-up of releases (e.g. a current Certificate of Compliance from the MA Department of Revenue).

☐ Action needed (describe below)

OSHA Requirements and Best Practices

45)

- ☐ ✓ For every hazardous chemical or solution that we use, we have Safety Data Sheets (SDS) on file and readily accessible to employees.

☐ Action needed (describe below)

46)	<input type="checkbox"/> ✓ We have a written Hazard Communication Program that meets basic OSHA requirements.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
47)	<input type="checkbox"/> ✓ We have identified required Personal Protective Equipment (PPE) (safety glasses, gloves, respiratory protection) for shop activities and our employees consistently use the required PPE.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
48)	<input type="checkbox"/> ✓ We have one or more eye wash station(s) that is properly tested and maintained.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
49)	<input type="checkbox"/> ✓ If we paint, sand, or weld, we have a Respiratory Protection Program for respirator use (including medical screening and fit testing) that meets basic OSHA requirements (skip if not applicable).
	<input type="checkbox"/> <i>Action needed (describe below)</i>
50)	<input type="checkbox"/> ✓ We do not need a hearing protection program, or (if we do), the Hearing Protection Program meets basic OSHA requirements.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
51)	<input type="checkbox"/> ✓ Personnel that work in areas with hazardous substances and waste, or flammable or combustible materials, have been trained (1) in emergency procedures and (2) in the safe handling, storage, transfer, and use of the materials (including how to use SDS information). We also keep records of the dates and training provided.
	<input type="checkbox"/> <i>Action needed (describe below)</i>

52)	<input type="checkbox"/> ✓ We have fewer than 11 employees (check box to left and go to next question) OR (if we have 11 or more), we 1) keep records (OSHA 301 forms and 300 Log) of work-related injuries or illnesses, as required by OSHA, and 2) have an OSHA 300-A Summary Form of total injuries and illness for the calendar year posted annually during the period of February 1 through April 30.
	<input type="checkbox"/> Action needed (describe below)
53)	<input type="checkbox"/> ✓ We have a Personal Protection Equipment (PPE) Program as required by OSHA that includes annual training and satisfies all OSHA requirements such as respirator fit testing and medical evaluations.
Spray Booth <i>This section is only applicable to AUTO BODY shops. Skip this section if you do not do body and paint work.</i>	
54)	<input type="checkbox"/> ✓ Our spray enclosure has a functioning mechanical exhaust system.
	<input type="checkbox"/> Action needed (describe below)
55)	<input type="checkbox"/> ✓ Our spray enclosure is constructed of fire resistant materials (walls must have a minimum of a 1-hour fire resistance rating to be considered fire resistant) (per NFPA 33).
	<input type="checkbox"/> Action needed (describe below)
56)	<input type="checkbox"/> ✓ We have placed clearly-labeled and accessible fire extinguishers near the spray enclosure.
	<input type="checkbox"/> Action needed (describe below)

57)	<input type="checkbox"/> ✓ Our spray enclosure has sufficient ventilation to maintain an air transfer rate of 100 linear feet per minute across the enclosure (per OSHA 29 CFR 1910.107(b)(5)(i)), and the face velocity of air at the filter does not exceed 200 feet per minute (per 310 CMR 7.03(16)(f)).
	<input type="checkbox"/> <i>Action needed (describe below)</i>
58)	<input type="checkbox"/> ✓ We store no more than a one-day supply of flammable or combustible liquids in our spray painting enclosure and within the vicinity of spraying operations.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
59)	<input type="checkbox"/> ✓ Our spray painting enclosure and surrounding areas are free of fire hazards and from hot surfaces (e.g., heating appliances, portable heat panels, steam pipes, or hot surfaces).
	<input type="checkbox"/> <i>Action needed (describe below)</i>
60)	<input type="checkbox"/> ✓ Our spray enclosure exhaust stack is properly located (as required by NFPA Code 33, the open end of the stack must end at least 25 feet from any combustible walls or unprotected openings). The exhaust stack also vertically discharges, is 35 feet tall or 10 feet above roof level, does not have a rain protection device that restricts exhaust flow, and has a gas exit velocity of greater than 40 feet per second (per 310 CMR 7.03(16)).
	<input type="checkbox"/> <i>Action needed (describe below)</i>
61)	<input type="checkbox"/> ✓ We are careful to avoid and address any complaints from neighbors about dust, odors, or other air pollution coming from your shop.

Storage of Flammable Chemicals

62) ☐ ✓ All of our solvents, coatings, and cleaning materials are stored in tightly-closed containers.

☐ Action needed (describe below)

63) ☐ ✓ We use a flammable storage cabinet or room to store our flammable liquids (required by OSHA for more than 25 gallons). Only flammable materials are kept in the flammable storage cabinet.

☐ Action needed (describe below)

Mixing Room

*This section is only applicable to **AUTO BODY** shops. Skip this section if you do not do body and paint work.*

64) ☐ ✓ When transferring flammable liquids from a drum to a small container for shop use, we ground and bond both containers to eliminate static sparks.

☐ Action needed (describe below)

65) ☐ ✓ Our mixing rooms or area is ventilated at a rate of 1 cubic foot per meter per square foot of floor area.

☐ Action needed (describe below)

66) ☐ ✓ Local exhaust ventilation is provided where mixing is performed.

☐ Action needed (describe below)

Refrigerant and Antifreeze Recovery

See "Refrigerant Recycling Systems" fact sheet for more information about how to comply.

67) ☐ ☒ **We do not service (repair, alter, evacuate) motor vehicle air conditioning units at our shop (check box to left and go to next question), OR (if we do), we comply with the requirements in the boxes below.**

- ☐ **We have certified equipment and technicians.**
- ☐ **We comply with documentation requirements.**
- ☐ **We follow sale and purchase restrictions.**
- ☐ **We recover and recharge refrigerant with an in-shop unit or transfer it offsite to a certified entity.**

☐ *Action needed (describe below)*

Fire Prevention and Emergency Planning

68) ☐ ☒ **Our automatic fire system/sprinkler system is operating properly, and sprinkler heads are kept unclogged (per OSHA 29 CFR 1910.107(b)(5)(iv)).**

☐ *Action needed (describe below)*

69) ☐ ☒ **We provide and document emergency training to our employees (e.g., OSHA, Code of Federal Regulations (CFR) 1910.38 and 1910.157, items such as fire extinguisher training, emergency responsibilities, and emergency numbers).**

☐ *Action needed (describe below)*

70) ☐ ☒ **We list emergency telephone numbers by the telephone.**

☐ *Action needed (describe below)*

71)	<input type="checkbox"/> ✓ We have a working fire extinguisher.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
72)	<input type="checkbox"/> ✓ We have a spill control plan.
	<input type="checkbox"/> <i>Action needed (describe below)</i>
73)	<input type="checkbox"/> ✓ We post emergency information (locations of fire extinguishers, alarms, evacuation routes, and post-exit meeting places).
	<input type="checkbox"/> <i>Action needed (describe below)</i>

This Shop is a Massachusetts Clean Auto Repair (MassCAR) Partner
(DOWNLOAD AND MODIFY THIS TEMPLATE TO DISPLAY IN YOUR SHOP OR
DISTRIBUTE TO YOUR CUSTOMERS.)

Working on vehicles involves working with chemicals and materials that can pose hazards to workers and the environment. We at _____ are proud to participate in the Massachusetts Office of Technical Assistance's (OTA) Massachusetts Clean Auto Repair (MassCAR) Partnership, and want to tell our customers what separates us from the rest.

MassCAR recommends best practices that make good business sense and meet safety, health and environmental goals. We are continually striving to find ways to reduce hazards while providing our customers with the very best service. We believe these goals are compatible and know that our customers feel that these practices are important. Here are some of the MassCAR actions that you can see in our shop:

- ENTER ACTION 1 THAT YOU WOULD LIKE TO DISPLAY TO YOUR CLIENTS (some examples are below)
- ENTER ACTION 2
- *Example:* We switched over to water-borne paints to lower the VOCs in our shop.
- *Example:* We switched over to an aqueous gun cleaner.
- *Example:* We performed a lighting retrofit to save energy.

For more information about any of these, please contact: [OWNER NAME]

For more information about OTA or the MassCAR Program or Partnership, visit
www.mass.gov/eea/ota/masscar or call 617-626-1060

For free and confidential technical assistance or questions, contact:
MA Office of Technical Assistance 100 Cambridge St. Suite 900, Boston, MA, 02114
Phone: 617.626.1060 Fax: 617.626.1095 E-mail: maota@state.ma.us
www.mass.gov/eea/ota/masscar

Permits and Inspection Readiness

As you know, in order to operate an auto shop, certain local, state, and federal permits and licenses are required. Some of these are based on the activities and services performed within your shop, and some are potential local requirements that must be adhered to by any business wishing to operate in your chosen city or town. Outlined here are some ideas that have been gathered from other shops that may help your shop prepare for inspections.

Types of Permits

General Information

Some permits are required by state and federal environmental regulations. However, the more basic permits are usually administered by your city or town Building Department, Public Works Department, Inspectional Services Department, or Fire Department. If your shop is in a small town, be sure to check with the relevant departments to find out the local requirements and authorities. There are also online services that can help your shop organize the various permits and registrations that are needed for a fee. If your shop has questions about which permits and licenses apply to the work you do, you can contact the [MA Office of Technical Assistance](#) at (617-626-1060) for free, confidential assistance.

Application for Registered Motor Vehicle Repair Shop

Application for Registered Motor Vehicle Repair Shop
Registration fee is \$450.00 for a three year period, Mail to: Division of Standards,
One Ashburton Place, Rm 1115, Boston, MA 02108

In addition to the registration fee of \$450.00 dollars, a surety bond, or letter of credit, in the amount of \$10,000 must accompany this application in accordance with the requirements of Massachusetts General Laws, Chapter 100 Section 2A.

Type of Shop: Auto Body _____ Glass Shop _____

Is this a RENEWAL? Yes _____ No _____

Business Name _____

Phone No. _____ Email Address _____

Business Address _____ City _____ Zip _____

Owners must register their shop with the [Massachusetts Office of Consumer Affairs & Business Regulation](#)

Business Registration

Your business must register with your city or town.

Motor Vehicle Repair Shop License (RS#)

Your shop needs this in order to operate. You must register with the Massachusetts Office of Consumer Affairs & Business Regulation. The application can be found [here](#).

Surety Bond

A surety bond or letter of credit in the amount of \$10,000 is required to obtain a Motor Vehicle Repair Shop License.

Worker's Compensation Policy

All employers in Massachusetts are required to carry workers' compensation insurance covering their employees, including themselves if they are an employee of their company. You can contact an insurance company to set this up.

Appraiser's License

Information about training and exams for this licensing can be found on the Massachusetts Office of Consumer Affairs & Business Regulation [website](#).

Occupancy Permit

Businesses must have an occupancy permit from your city or town enforcement agency. Check with them to find out what other permits may be required to legally operate your business. . It should be posted near the entrance. Your shop can check your city or town requirements.

Indoor Vehicle Storage Permit

Otherwise known as a "Garage" permit, this allows your shop to store vehicles inside. Your shop may be required to obtain this from your city or town. As an example, the application for Boston shops can be found [here](#).

Use of Premises Permit

If your shop needs to store some vehicles in an outdoor area near the shop, you may also need this permit. You can check with your city or town. As an example, the application for Boston shops can be found [here](#).

Flammable Storage Permit

This may usually be obtained through the fire department and is required for your shop to store flammable liquids. More information about the storage of flammable liquids can be found on the "Understanding OSHA Requirements for Auto Shops" fact sheet.

Hazardous Waste Registration

Your shop needs to identify its hazardous wastes, [register with the Massachusetts Department of Environmental Protection \(MassDEP\)](#), and keep its Generator ID and registration readily available. See "Hazardous Waste Management fact sheet."

Underground or Above-ground storage tank permit

Directions for online filing for underground storage tank permits, required by MassDEP, can be found [here](#). Forms for above-ground storage tank construction or annual renewal inspection, required by MassDEP, can be found [here](#).

Cutting Torch Permit and Oxygen, Acetylene Storage Permit

These are two separate permits that are relevant if your shop performs welding. They can be obtained from your city or town's fire department. See the Safe "Welding Practices" fact sheet.

Towing License

You can check with your city or town for any licenses needed for towing.

EPA's NESHAP 6H Notification

Contact your paint manufacturer to request a list of paints that are regulated by US EPA's NESHAP 6H regulation. If you do use regulated coatings, you must notify the US EPA using this [form](#). If you do not use these products, you can **file for an exemption**. See more information in the 'Federal and State Auto Body Air Regulations' fact sheet.

Air Permit

The EPA requires that auto body shops need a spray booth. MassDEP requires that spray booth operators have an air permit that is based on the VOCs emitted. Find the permit applications [here](#). You may be exempt from the MassDEP air permit if your coating and solvent use is below the threshold listed in [OTA's factsheet](#). Contact Marina Gayl at Marina.Gayl@state.ma.us or 617-626-1077 at OTA if you need assistance in calculating your coating and solvent use, or any other issues.

Owner / Operator Certification for Painter Training

The EPA NESHAP 6H regulations require documented training for paint technicians and spray booth operators. Specifically, the [regulation requires](#):

Hands-on and classroom instruction that addresses, at a minimum, initial and refresher training in the topics listed in paragraphs (f)(2)(i) through (2)(iv) of this section.

- *Spray gun equipment selection, set up, and operation, including measuring coating viscosity, selecting the proper fluid tip or nozzle, and achieving the proper spray pattern, air pressure and volume, and fluid delivery rate.*
- *Spray technique for different types of coatings to improve transfer efficiency and minimize coating usage and overspray, including maintaining the correct spray gun distance and angle to the part, using proper banding and overlap, and reducing lead and lag spraying at the beginning and end of each stroke.*
- *Routine spray booth and filter maintenance, including filter selection and installation.*
- *Environmental compliance with the requirements of this subpart.*

An example of the training documentation can be found [here](#).

Inspection Readiness

To be prepared for inspections, read through the checklist and attend to the items that need still need action. Having an organized shop, where employees know where important and current documents are kept, will help with the ease of inspections.

Have a “book” or binder with key documents and information readily available to present to an inspector. See these examples of documents to be included:

- Permits and licenses
- Tax ID number
- Hazardous waste record keeping (storage, transportation logs) – these can be the most recent records, while older records can be stored in another binder or in your shop’s computer system.
- Contingency plans for fire prevention, emergencies, and spill control.

- Safety Data Sheets (SDSs) for all products. Your supplier or manufacturer must supply you with the SDS for each product used in your shop. Because SDSs may take up a lot of space, it may be easier to keep these in a separate location or binder that is readily accessible to your employees.
- Employee certifications, licenses, training records.
- Documents from previous inspections.
- Spray booth records, if you are a body shop. These include information on filter changes and monthly tallies of all organic materials used (coatings and solvents).

For free and confidential technical assistance or questions, contact:
MA Office of Technical Assistance 100 Cambridge St. Suite 900, Boston, MA, 02114
Phone: 617.626.1060 Fax: 617.626.1095 E-mail: maota@state.ma.us
www.mass.gov/eea/ota/masscar

Common Hazardous Wastes

Auto shops use many products that contain hazardous ingredients. The following lists are meant to help identify which wastes may need to be handled as hazardous or require other special disposal outside of the standard municipal solid waste stream. The lists are a guide and not considered to be a complete representation of every hazardous material your workers may use. See the “Hazardous Waste Management” fact sheet for more information.

Common Hazardous Wastes Found in Auto Shops

A material may be regulated as a hazardous waste if it contains a substance that is listed by the EPA or MassDEP as a hazardous waste, or if it has the characteristics of a hazardous waste. See the fact sheet on Hazardous Waste Management for more information on how the regulations define hazardous wastes. You may have to consult an expert or have the waste tested to be sure. Substances that are not technically hazardous wastes may still present hazards and should be handled with care to prevent injury or releases.

Brake pads

Brake pads can either contain [asbestos](#) which is regulated by the U.S. DOT and EPA, or be high in copper, chromium, mercury, or cadmium which are heavy metals that must be managed as hazardous waste. Your shop can order brake pads that are labeled as ‘asbestos-free,’ ‘low-copper’ or composite alternatives that are less hazardous for your workers and the environment. Because it may be difficult to find out the composition of the brake pads on cars coming into your shop, we recommend managing these as though they do contain asbestos and are a hazardous waste.

Chemical paint stripper

These substances are usually corrosive, toxic, and possibly ignitable. Avoid using paint gun washers or other products that contain methylene chloride (MeCl). Methylene chloride is a probable carcinogen (cancer-causing agent) and was recently classified as a [‘higher hazard’ substance](#) in Massachusetts due to its threat to the life and health of people who use it. There is no ‘safe’ level of exposure to carcinogens, and therefore, exposure should be limited to the lowest feasible concentration and amount. Even when air levels are within the acceptable OSHA Permissible Exposure Limits (PEL) in the air, skin absorption may lead to overexposure. Because methylene chloride quickly evaporates and has a low odor-detection threshold, [once you can smell methylene chloride you are being over-exposed](#). Make sure your workers are aware of how dangerous this chemical is and choose safer alternatives. For information on methylene chloride, view the NJ Department of Health’s Right To Know Chemical Hazards Fact Sheet in [English](#) or [Spanish](#).

Lead-acid batteries

If not recycled properly, lead-acid batteries contain highly corrosive and toxic materials like sulfuric acid and lead that should be managed as hazardous waste. Retailers often have collection and recycling programs for used batteries.

Lead wheel weights

Lead exposure can affect every organ in your body, and is most recognized for causing permanent damage to the brain. Lead wheel weights significantly contribute to lead pollution when they fall off cars and end up in storm drains or on the street. We encourage you to attempt to eliminate your use of lead wheel weights by moving to adhesive non-lead wheel weights that do not pose a risk and are more likely to stay on the tires. They are easily dispensed and measured on a flexible adhesive tape roll, so you have the added benefit of not having various sizes sitting around your shop. A list of companies that supply both lead-free adhesive and clip-on wheel weights can be found [here](#).

In the meantime, use the following tips on handling any lead wheel weights that come into your office:

- Place a container labeled “lead wheel weights only - scrap metal” near the tire changing and wheel balancing machines.
- Keep the container securely covered and only uncover it when adding discarded wheel weights.
- Recycle discarded lead wheel weights as scrap metal.
- Do not put lead wheel weights in the trash cans or dumpsters.
- Return all lead wheel weights unused product to your supplier for credit or recycle them.
- Train all staff on the above requirements.

Oily rags, sorbent pads

Treat oily rags and sorbents as oily hazardous waste, unless they pass the “one drop” test (meaning they will not leak oil) as described in the MassDEP’s [“Policy for Industrial Wipers Contaminated with Solvents” document](#). For more information on waste oil management, see the “Waste Oil Management” fact sheet.

Sanding Dusts

Dusts from sanding can contain the toxic materials from the cars’ surfaces like the paint, metal, and even lead. Even though lead has been banned from household paint since 1978, it still exists in industrial and automotive paints. Assume that any vehicle that you are working on contains lead paint. Aside from lead, you must prove and keep records that the sanding dust contains levels of regulated toxics that are below the reporting threshold levels by having a Toxicity Characteristic Leaching Procedure (TCLP) done on your sanding waste. If the TCLP results are above the threshold for any of these, the spent material is considered hazardous waste and must be stored as such. If you do not perform the TCLP test, the spent material is still considered hazardous waste.

Solvent-Based Primers, Basecoats, and Clear Coats

Solvents are usually ignitable and toxic, so your shop should manage them as hazardous waste. All clear coats contain [isocyanates, which can cause work-related asthma and chemical sensitization](#) when it is absorbed through the skin or inhaled. [The health damage is irreversible and can be fatal](#). In addition, if your shop uses primers or basecoats that contain xylene, toluene, benzene, or ethyl benzene among others, use extra care while handling and manage as hazardous waste. Use these [tips to minimize paint waste](#).

Solvents parts washing sink

The chemicals used in your parts washing sink can be toxic or ignitable and should be managed as hazardous waste. Solvent-based products can contain trichloroethylene (TCE), ethyl benzene, and xylene, which are hazardous wastes, highly toxic, and associated with many negative health effects. Acetone and methanol are also listed hazardous wastes but less toxic than the first three listed. In addition, if your shop uses a product that contains hexane, it can have a synergistic effect with other chemicals to increase the hazardous nature of the product. The CA Department of Health Services' [n-Hexane Use in Vehicle Repair](#) fact sheet is a useful resource. Ask your supplier or product manufacturer for the Safety Data Sheet (SDS) to check the ingredients, and consider moving toward a [water-based](#) or microbial parts washer to protect your workers and eliminate hazardous waste and associated costs. View this [factsheet](#) for a list of aqueous and microbial parts washers.

Spray Booth Filters

Spray booth filters contain the chemicals listed in your paint and may be toxic. It is your responsibility to test your filters with a toxicity characteristic leaching procedure (TCLP) test to prove that your filters are not hazardous; otherwise, always treat and dispose of spent filters as hazardous waste.

Still Bottoms from Solvent Recycling Systems

The “pucks” of dried paint from your solvent recycling system can be toxic since they contain the remnants of paints and residual solvents. Unless you can prove otherwise through conducting a TCLP (see above, as mentioned in the Spray Booth Filter section), manage these as hazardous waste.

Used Alkaline or Acid Cleaning Solutions

Cleaning solutions with alkaline or acidic characteristics are usually corrosive and possibly may be toxic. If a waste has a pH of less than 2 or more than 12.5, it is a characteristic waste and should be managed carefully as hazardous waste.

Undeployed air bags

Some air bags contain corrosive and reactive substances (sodium azide) and should be managed as hazardous waste. Contact the air bag manufacturer to determine whether an each individual undeployed air bag contains hazardous material and dispose of them accordingly.

Used antifreeze

Used antifreeze is toxic and should be sent out to a recycler, managed as hazardous waste, or recycled in an in-shop unit. See the “Antifreeze Recycling” fact sheet for more information.

Used fuel filters

Used fuel filters are both ignitable and toxic and should always be managed as hazardous waste.

Used oil

Used oil is a regulated substance (toxic and ignitable) in Massachusetts and it may be handled as hazardous waste oil or as “regulated recyclable materials” for use as fuel in a space heater under 310 CMR 30.200. For more information, see the “Hazardous Waste Management” and “Waste Oil Management” fact sheets in this guide. Also visit the MassDEP website for [best management practices for waste-oil burners](#).

Used oil filters

When used oil filters are drained sufficiently and no longer leak oil, it is possible that these may be disposed of as municipal waste or sent to a metal recycler. Sufficient drainage consists of either being drained upside down over a drip rack or drain table for at least 12 hours or using an oil filter crusher to collect the waste oil. Otherwise, these filters must be managed as hazardous waste oil. See the “Oil Filter Can Crushers,” “Hazardous Waste Management,” and “Waste Oil Management” fact sheets in this guide.

Water-Based Paints

Even though water-based paints are generally much safer to use than solvent-based paints, they often contain toxic metals and materials that may be hazardous waste when discarded. Look at the SDS or ask your supplier if the product contains any metals that would indicate a need for a Toxicity Characteristic Leaching Procedure (TCLP). Your waste hauler may also be able to determine the waste profile.

Other Hazardous or Otherwise Regulated Items

Aerosol cans

Aerosol cans can both contain hazardous substances and be hazardous themselves. Hazardous waste management companies will collect almost empty aerosol cans as they can be ignitable and possibly toxic.

Mercury-Containing Equipment (switches, fluorescent lights)

Mercury-Containing Equipment is classified as a “universal waste.” It must be collected and contained in a tightly-sealed container and correctly labeled before being picked up by an appropriate management company. See the EPA’s page on [Mercury-Containing Equipment](#).

Scrap Tires

MassDEP requires tires to either be stored in an enclosed area or trailer, or covered with a tarp if stored outdoors. Tires can be recycled and repurposed, so you can easily find places that will either remove the tires for free, or even have someone pay you for the scrap. It is always your shops responsibility to make sure that the tires and all wastes are properly stored and disposed of. [See MassDEP’s requirements and recommendations for scrap tires](#).

Refrigerant

Refrigerant is not a hazardous waste but is highly regulated by the EPA. If your shop does not recycle the refrigerant (see the “Refrigerant Recycling” fact sheet), it must be reclaimed by an EPA-certified reclaimer. For the list, see [EPA- Certified Refrigerant Reclaimers](#).

Proper hazardous waste storage and management can help your shop pass inspections with ease, save time and money by avoiding fines, keep your shop safe, reduce health risks for your workers, and protect your community's environment. The following information is an explanation of the regulations concerning hazardous waste transportation and disposal divided into sections based on what you and your workers may find in auto body shops and auto repair shops.

EPA RCRA Regulations

Hazardous wastes are regulated by the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) under the [Resource Conservation and Recovery Act \(RCRA\)](#) if they are **ignitable, corrosive, reactive, or toxic**, or if they are included on a list of hazardous wastes. While many of your wastes are easily identified as hazardous, such as used solvents, there are other materials, like dust from sanding or used filters and rags that may be hazardous because they contain hazardous substances. If you are uncertain whether your shop should manage a substance as hazardous waste, it is preferable to consult an expert or perform testing through a [MassDEP certified laboratory](#) than to take a chance. Businesses that generate hazardous waste are responsible for that waste from cradle-to-grave.

How to Begin

Understand how the regulations work

MassDEP has produced a useful [guide for Small Quantity Hazardous Waste Generators](#). The EPA has also created a [RCRA regulation overview](#) and a [User Friendly Overview of Hazardous Waste](#).

Identify your hazardous wastes

Ask your vendor if any products you use are listed as hazardous waste by [EPA under RCRA](#) or by MassDEP under [310 CMR 30.131-30.135](#). You may have to look at the chemicals listed in the links above and compare them with the Safety Data Sheets (SDS) for each chemical you use. Any waste that contains a listed waste is hazardous (the complete mixture). Your best option is to discuss this with your supplier who may already have this information.

Evaluate whether you have [characteristic wastes](#), which are defined as ignitable, reactive, corrosive and toxic.

If you have a mixed waste that includes multiple products and chemicals (a paint mixture, for example), and are unsure whether or not to manage the substance as hazardous waste, send out a sample to a [MassDEP certified laboratory](#) that performs Toxicity Characteristic Leaching Procedure (TCLP test). That test will inform your shop how to handle the substance. You should

keep all TCLP test data in your files, and will only be required to retest if the manufacturer changes the formula or your business starts using a different product.

Quantify how much waste you generate in a month

That will determine your generator status.

Your shop will have different reporting, storage, and transportation requirements based on how much waste is generated per month. Most auto shops are either a Very Small Quantity Generator (VSQG) or a Small Quantity Generator (SQG), and a very small percentage of shops are Large Quantity Generators (LQG). It is important to note that shops may have a separate generator status for hazardous wastes and oil based on the accumulation of each. However, the following are the generation limits for all three hazardous waste categories:

Very Small Quantity Generator (VSQG):

These businesses generate less than 220 lbs (about 27 gallons, depending on the substance) of hazardous waste and no acutely hazardous waste per month. Up to 2,200 lbs (270 gallons or about five 55 gallon drums) can be accumulated on site over any length of time. For these, there is no annual compliance fee. VSQGs can hire an approved hazardous waste management company or self-transport up to 55 gallons (one drum) of waste at a time to an approved hazardous waste management company. VSQGs can also transport waste oil to another business or location for use in a waste oil heater (for more information, see the “Waste Oil Management” fact sheet). See further transportation information below.

Small Quantity Generator (SQG):

These businesses generate between 220 and 2,200 lbs of hazardous waste and up to 2.2 lbs of acutely hazardous waste per month. This waste must be shipped by an approved hazardous waste management company within 180 days and the accumulation at your shop must always be limited to 13,200 lbs at one time.

Large Quantity Generator (LQG):

These businesses produce more than 2,200 lbs of hazardous waste or more than 2.2 lbs of acutely hazardous waste per month. They are required to ship waste by way of an approved hazardous waste management company within 90 days. Any amount of hazardous waste can be accumulated onsite as long as it is stored correctly and shipped on time.

Acutely hazardous waste

Only one kilogram (just over 2.2 lbs) of this kind of waste will place you in the LQG category, and any amount makes you an SQG, if not an LQG. Check the list at MA [310 CMR 30.136](#).

Registration with MassDEP

If your shop generates any hazardous waste, you must register with MassDEP. VSQGs and SQGs need to submit a [Hazardous Waste Generator Registration Form](#). The thresholds listed above hold true for both hazardous waste and waste oil. If your shop produces a much smaller quantity of either item, it is recommended to register separately and hold two different generator statuses.

Onsite Storage for VSQGs and SQGs

Regulations for storing hazardous waste and waste oil include requirements for the accumulation area, storage containers, and communication about the materials and nature of their associated hazards. Raw materials, and anything other than hazardous materials, may not be stored in your hazardous waste storage area. The full regulations regarding storage and transport of hazardous material by generator status can be found at [310 CMR 30.341- 353](#). The LQG and SQG businesses have more requirements associated with onsite storage and recordkeeping. However, all generators of hazardous waste must follow the guidelines listed below.

The Storage Area Must Have:

- Clear demarcation by a visible line, tape, fence, or separate room.
- A sign posted that says “HAZARDOUS WASTE” in large capital letters.
- Protection against unauthorized entry. This includes placing the hazardous waste area in the “employees only” zone of your shop.
- Containers that sit on a surface free of cracks or gaps and are impervious to the hazardous wastes being stored and away from floor drains.
- Outdoor storage areas also require secondary containment in the form of a berm or other containment structure that can capture spills or leaks. If any spills do occur, these need to be promptly cleaned up as a hazardous spill. See the “Spill Prevention and Cleanup” fact sheet for more information on clean-up methods and reportable spill quantities.
- Pallets on which to place the waste if containers are stacked.
- Drums that can be viewed from all sides to ensure their integrity.
- Emergency information posted by the phone closest to hazardous waste storage area.
- Only hazardous waste within its borders.

Hazardous Waste Containers Must:

- Be clearly labeled with the words - “HAZARDOUS WASTE,” the name of the individual waste – Example: “SOLVENTS,” and the type of hazard – Examples include “TOXIC, IGNITABLE, etc.”
- Be clearly labeled with the date on which accumulation began (day, month, year) if your shop produces between 220 and 2,200 lbs of hazardous waste per month (applicable to a SQG generator status rather than a VSQG).
- Contain only like types of waste. Do not mix oil waste with other types of waste.

- Be cleaned before filling and kept tightly sealed at all times. This prevents the mixing of incompatible wastes.
- Be inspected weekly to ensure continued good condition.

Transportation and Recordkeeping for VSQGs and SQGs

Regardless of your shop's generator status, MassDEP inspectors look for clear records of hazardous waste accumulation and transportation information.

Manifests

All generators of hazardous waste (except VSQGs that self-transport and keep those records, see below) are required to retain their manifests that include detailed transportation information and accumulation quantities and dates. These manifests must be kept for three years. For information on manifests, see EPA's [Hazardous Waste Manifest System](#).

Self-Transport Requirements for VSQGs

- VSQGs can transport no more than one 55 gallon drum at a time and may only transport wastes generated on their premises.
- Transport only compatible wastes.
- The wastes must be transported in properly sealed and labeled containers (see the labeling requirements above) that are secured to the vehicle.
- Your shop must also meet the shipping requirements of MassDOT and the Department of Public Safety.
- There must be a copy of your shop's generator registration in the vehicle.
- You must transport to a waste hauler willing to accept wastes that are self-hauled.
- In lieu of keeping shipping manifests, VSQG self-transporters must keep records of the quantities transported, dates, the destination of the waste, and the proofs of receipt of the waste by the facility or generator.

In the event of a spill or leak while transporting hazardous waste, call the MassDEP Emergency Response Line at (888) 304-1133.

Find Additional Information

- See this MassDEP fact sheet on hazardous waste requirements for VSQG and SQG: [A Summary of Requirements for Small Quantity Generators of Hazardous Waste](#)
- See MassDEP's page on VSQGs: [The Very Small Quantity Generator of Hazardous Waste](#)

- See the EPA's Frequently Asked Questions page with information on e-Manifests:
[e-Manifest Frequent Questions](#)
- MassDEP puts out a list of approved transporters that is regularly updated:
[Hazardous Waste Transporters](#)
- See MassDEP's page of complete Hazardous Waste information:
[Hazardous Waste Management](#)
- See the EPA's page on Hazardous Waste Regulations:
[Hazardous Waste Regulations](#)
- If your shop is unsure whether or not a substance needs to be managed as hazardous waste (it is a blended waste such as mixed paint), here are some lists of certified laboratories:
[MassDEP certified laboratories](#)
[Laboratories That Test Hazardous Waste](#)

Note that the previous text summarizes only those MA regulations that pertain to hazardous waste management as they are likely to be relevant to auto shops. MassDEP has numerous other regulations that auto shops must comply with, most notably regulations governing management of solvents, paints (see the "Spray Painting Regulations" fact sheet), used oil (see the "Waste Oil Management" fact sheet) and regulations on industrial wastewater (see the "Wastewater Management" fact sheet).

Spill Prevention

Even the cleanest shops have occasional spills. Spill prevention is the best practice for environmental compliance and shop safety. When spills do occur, it is important to clean them up immediately to prevent environmental releases and injuries to workers who may slip on greasy floors or inhale harmful vapors. Tips on spill prevention are outlined in this fact sheet.

Spill Prevention

Keep Containers Closed when not in Use

Workers use many chemicals and products each day. Making sure that all containers are fully closed both reduces the risk of spills and improves your shop's air quality by keeping chemicals out of the air. It also prevents contamination and evaporation of the product. This practice can keep your shop in compliance with air quality regulations, as inspectors regularly look for tightly-capped chemical containers.

Capture Liquids in Collection Devices

Use collection devices to prevent oil, antifreeze, transmission fluid, and other fluids from leaking onto the floor while doing repairs. See the "Vehicle Fluid Evacuation Caddies" fact sheet for your options.

Provide Secondary Containment for all Stored Liquids

By having a secondary container to catch leaks from materials or waste in the event of a leak, you can prevent serious spills from spreading over your entire shop.

Options for Cleaning Up Spills

If a spill occurs, there are various options for cleaning up moderate to minor spills that will keep your shop in compliance with regulations. A combination of these methods may work, although if your shop uses absorbent oil-collecting pads there may be little need to combine methods.

Absorbent pads

Absorbent pads are highly absorbent sheets that work best when placed over a spill or underneath a potential drip as a preventative measure. The benefits of sorbent pads are as follows:



This waste oil caddy reaches elevated vehicles to catch oil without spilling.

Photo courtesy of Bendpak.com, labeled for reuse by Google Images

- Increased absorbency compared to other methods as one pound of the pad can hold an average of one gallon of oil or other liquid.
- Reduced need to purchase sorbent material because of increased absorbency (especially when compared to loose sorbents and kitty litter).
- Decreased labor time for clean-up and increased shop cleanliness when compared to the use of loose sorbents. Pads are easy to put down and pick up with little cleaning time needed as a result of their use (loose sorbents can create messes).
- Easier waste management and a possible reduction in hazardous waste disposal costs due to reduced volume of contaminated material.



Absorbent pad can be left over even the smallest spill to continue absorbing fluid without compromising shop cleanliness.

Photo courtesy of Madison Park Technical Vocational High School

Loose sorbents

Various brands of loose sorbent (as well as kitty litter) are available for spill cleanup. They are meant to be piled onto a small spill to collect the liquid. After the spill has been absorbed, the loose sorbent needs to be scooped up and disposed of as hazardous waste.

Rags

Workers use these to pick up drops while working.

Spill kits

If your shop works on larger vehicles, spill kits are a good way to be prepared for a larger spill. These come in varying sizes and contain multiple tools to handle a spill and prevent releases to the environment such as booms, pads and rolls, gloves, goggles, etc. Employees should know where they are kept in the shop and be trained on how to deploy the kit if necessary.

Things to Consider

Waste management

Regardless of what method you use to clean up spills, you may have to handle the rags, sorbent pads, or loose sorbent as hazardous depending on what was cleaned up. Treat oily rags and sorbents as oily hazardous waste unless they pass the “one drop” test (meaning they will not leak oil). The rags may be able to be reused if wrung out or sent to a specialized cleaning service. See the “Common Hazardous Wastes” and “Hazardous Waste Management” fact sheets for more information on handling hazardous substances.

Sorbent categories

Talk to a supplier about the different types of sorbents that are made for oil, antifreeze and other substances. Some sorbents are “universal sorbents” which means that they can pick up several substances.

Worker safety

Ensure that workers in the surrounding area wear closed-toe shoes and use gloves to clean up a spill. Also make sure your shop has adequate ventilation as the vapors from the spill will reduce air quality in the shop.

Reportable Quantities of Substances

If your shop experiences a spill that is released to the outside environment, evaluate whether or not it must be reported to the MA Department of Environmental Protection (MassDEP) within the 24-hour limit. The following types of spills need to be reported:

- Oil-Based Paint – more than 1 gallon
- Paint Thinner – more than 1 gallon
- Oil – more than 10 gallons
- Power steering fluid or automatic transmission fluid - more than 10 gallons

The best way to be inspection-ready is by storing, identifying, and keeping record of the sorbents as hazardous waste unless the sorbents contain oil and pass the “[one-drop test](#),” meaning that there is no free-flowing oil that could escape. In this case, they can be disposed of as municipal waste.

Find Additional Information

- For general spill and sorbent information, see this United States Department of Agriculture fact sheet for [Spill Response Procedures & Sorbent Materials](#).
- For an explanation of the “one-drop” test, see the MassDEP page for the [Policy for Industrial Wipers Contaminated with Solvents](#).

For free and confidential technical assistance or questions, contact:
[MA Office of Technical Assistance](#) 100 Cambridge St. Suite 900, Boston, MA, 02114
Phone: 617.626.1060 Fax: 617.626.1095 E-mail: maota@state.ma.us
www.mass.gov/eea/ota/masscar

Vehicle Fluid Evacuation Caddies

Fluid collection caddies can significantly improve the ease and effectiveness of directly transferring fluid from a vehicle to a hazardous waste drum. All caddies and collection drums must be labeled with the type of fluid they are collecting.

Options for Vehicle Fluid Collection

Self-Evacuating Used Oil and Antifreeze Drains

Many shops use self-evacuating oil and antifreeze drains to cleanly and quickly evacuate fluids from a car. See the “Antifreeze Recycling” fact sheet to learn about options for antifreeze management. In the self-evacuating oil and antifreeze drains, the fluid is allowed to drain from the vehicle and flow through the funnel, collecting in the caddy’s small temporary storage tank. To evacuate the tank, it is connected to an air supply that can push the fluid from the tank into a hazardous waste collection barrel or tank designated for that type of waste using an air-tight connection. See the “Hazardous Waste Management” fact sheet.

Oil Lift Drains

Oil lift drains often appear similar to the self-evacuating oil drains. However, the more basic oil lift drains need to be slowly emptied and allowed to drain into a waste collection barrel instead of using shop air to quickly empty it. This leads to less spills than using a drip pan (described below) but takes more time than using the self-evacuating version.

Drip pans

Using a drip pan is the cheapest and simplest option for spill prevention while working on a car that could drip fluids, but far less effective at preventing spills than the methods described above. Most supply companies sell basic drip pans. After a drip pan is used, workers transfer the fluid to hazardous waste collection drums. The drip pans need to drain for at least 12 hours in order to be sure that enough oil has drained from them. See the “Waste Oil Management” fact sheet in this guide.



This waste oil caddy can be wheeled over to an oil collection tank and drained directly into the tank using an air supply.

Photo courtesy of Madison Park Technical Vocational High School

The Benefits

Prevent spills

Oil capturing techniques outlined above, particularly those that use self-evacuating technology, are effective at preventing spills and drips onto the shop floor. Using these techniques reduce the need to clean up spills. See the “Spill Prevention and Cleanup” fact sheet for more information.

Improve ease of hazardous waste management

Drip pans don't necessarily improve the ease of hazardous waste management. When used, the oil or other fluid still must be emptied into a collection barrel and the pan drained for at least 12 hours (in the case of waste oil). See the “Waste Oil Management” fact sheet for more information. However, self-evacuating models ensure that the waste fluid can be transferred from vehicles to collection barrels quickly and without spills. Also, both the oil lift drains and the self-evacuating variety have wheels that make transfer to a waste collection barrel easier.

Take the Next Step

- Contact the Massachusetts Office of Technical Assistance for free and confidential assistance (617-626-1060).
- Ask other shop owners what their preferred methods are.
- Talk to suppliers about your options for fluid collection.

Most shops generate waste oil and must have procedures to handle that waste properly. Waste oil is regulated as hazardous waste in Massachusetts. In addition to providing information on waste oil regulations, this fact sheet also describes the option of using waste oil for heat.

MassDEP Waste Oil Regulations

Generator status

All shops that generate waste oil must register with MassDEP and include the quantity of waste oil produced when notifying MassDEP of total waste oil generation. Shops may have a separate generator status for hazardous waste and waste oil based on the accumulation of each. However, the following are the generation limits for all three waste oil categories that you must follow:

Very Small Quantity Generator (VSQG):

These businesses generate less than 220lbs (approximately 27 gallons) of waste oil per month. VSQGs can also transport waste oil to another business or location for use in a waste oil heater. See below for more information.

Small Quantity Generator (SQG):

These businesses generate between 220lbs to 2,200lbs (or approximately 27 and 270 gallons) of waste oil per month.

Large Quantity Generator (LQG):

These businesses produce more than 2,200lbs or (approximately 270 gallons) of waste oil per month.

Storage

The area in your shop that is designated for the storage of waste oil must be marked, in letters at least one inch high, with "Waste Oil." Generators of waste oil must comply with the same containment requirements as other producers of hazardous waste. Do not mix waste oil with other types of hazardous waste. Keep the drums away from electrical areas.

Spills

If the spill occurs near coastal waters or storm drains, call the National Response Center at 1-800-424-8802. Call 911 to report all spills to nearest fire department. Also, if a spill occurs, your shop is required to report any amount beyond 10 gallons of oil immediately to MassDEP at 1-888-304-1133. There is a penalty for failing to report this within 24 hours.

Waste oil collection

Allow used oil filters to drain completely for at least 12 hours after removing them from the vehicle. See the “Oil Filter Can Crushers” page for more information on a mechanized way to collect oil from oil filters.

Oily rags are also considered hazardous waste as long as they pass the “one-drop test” and no longer drip oil.

To capture oil from vehicles during maintenance, there are several methods ranging from drip pans to “Vehicle Fluid Evacuation Caddies” (see fact sheet).



This waste oil management system works with waste oil collection caddies (left) that are wheeled from the vehicle to the shop's waste oil storage tank (right). The oil is emptied from the caddies into the storage tank using the hookup (circled in both photos). This waste oil storage tank is close to an outside wall, allowing the pick-up company to empty the tank through the wall (indicated by the arrow). If your shop considers this method, be sure to obtain the correct receipts from the pick-up company if they operate outside your shop's business hours. Note that waste oil containers and funnels must always be closed when not actively depositing oil.

Photos courtesy of Madison Park Technical Vocational High School

Waste oil heaters

If your shop can make use of the waste oil collected from vehicles, this can save money on energy during the winter. VSQGs can also transport the waste oil to another site for use in a heater. If your shop intends to burn waste oil for heat, submit an [On-Site Class A Recycling Notification Form to MassDEP](#).

Also, shops that burn waste oil as heat must follow the following regulations

- Burn waste oil only between September 15th and June 15th.
- Burn or transport at least 75 percent of all waste oil accumulated onsite during the same calendar year (therefore, keep logs of the waste oil generated, transported, and received).

- Never modify space heaters.

If your VSQG shop transfers waste oil to another location that burns it, you must maintain transport logs that document the dates, quantities transferred, the receiving location's name, address, and hazardous waste generator number, and signatures of receipt for each instance. According to the MassDEP regulations for VSQGs, transport only one 55 gallon drum at one time.

Find Additional Information

- Follow the guidelines of these MassDEP fact sheets:
[Best Management Practices for Automotive Recyclers: Waste Oil, Used Oil Filters, and Waste Oil Space Heaters](#)
[Safe Handling of Waste Oil for Burning in Space Heaters](#)

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Wastewater Regulations and Best Practices

Industrial wastewater (IWW) generated by your auto shop consists of vehicle wash water, shop floor wash water, laundry water, and equipment wash down water. Auto shops use many materials, such as paints, thinners, solvents, degreasers, gasoline, motor oil, and other automotive fluids that could easily be part of the industrial wastewater stream. Dirt, road salt, and other debris on car surfaces serviced at shops also can end up in the wastewater. Your shop's wastewater can contaminate local water supplies which can result in heavy fines if best wastewater management practices are not implemented. It is your responsibility to know the final destination of your wastewater stream.

This fact sheet presents legal requirements for discharging auto shop wastewater as well as some wastewater management best practices. It is very important to note that the Massachusetts Department of Environmental Protection (MassDEP) prohibits discharge of IWW to septic systems. Dumping or discharges directly to the ground are also prohibited without a groundwater discharge permit from MassDEP, which can be very difficult to obtain. The specific regulatory requirements depend on the ultimate fate of your wastewater.

MassDEP Wastewater Regulations: What You Need To Know

Holding tanks

If your shop temporarily discharges IWW to a holding tank before it is hauled offsite for treatment or discharge, you must submit a one-time compliance certification to MassDEP ([310 CMR 18.00](#)) unless your IWW holding tank was previously approved by the agency. You must file online [here](#).

If your shop discharges IWW to a sewer, you must meet local sewer discharge requirements. Contact your local sewer authority to make sure you are in compliance.

Discharging to the sewer

If your shop discharges greater than 25,000 gallons per day to a sewer authority that does not have an approved Industrial Pretreatment Program (under regulatory amendments [314 CMR 7.00](#) promulgated in April 2014), you must obtain a sewer connection permit from MassDEP. This is a very large volume of wastewater that may only affect larger shops or those with car washes. MassDEP Sewer Connection Forms can be found [here](#).

Best Practices

Prevent shop waste water from entering the environment

Shops must have floor drains or a network of water collection troughs to ensure that any IWW generated within the shop is collected and does not flow outside the shop and into the environment. Shop owners should confirm that any water used to clean spray booths, washing floors, vehicles, and various other activities are collected and do not leave your property.

Install an oil-water separator

If you do not have a wastewater storage tank, the use of an oil-water separator is required. An oil-water separator removes oily fluids and sludge from wastewater before it is discharged into a sewer connection. It is important to service your oil-water separator to maintain its performance. The bottom sludge will eventually have to be collected and handled according to waste management requirements—you should determine if the sludge should be classified as hazardous waste or waste oil.

Ensure floor drains do not discharge into the ground

All floor drains must only discharge to municipal sewers or approved industrial wastewater holding tanks. Floor drains may never discharge into the ground.

Clean spills appropriately before washing your floor

When a shop rinses or washes their floor, oil, grease, paint chips, and other debris enters your wastewater stream. Clean spills (see the fact sheet on “Spill Prevention and Cleanup”) prior to ever rinsing down your floors. This can help ensure you are not liable for any violations and are in compliance with your local sewer authority. In addition, shops must make sure that chemical storage areas (e.g., paint mixing rooms, hazardous waste storage areas, etc.) are designed to contain unexpected leaks to prevent chemicals from entering your wastewater or the environment.

Find Additional Information

- Section 2 of this EPA checklist highlights important practices for managing wastewater at auto repair shops.
[Consolidated Screening Checklist for Automotive Repair Facilities Guidebook](#)
- King County Washington has a fact sheet on selecting and maintaining oil-water separators.
[Fact Sheet: The Oil/ Water Separator, How to select and maintain an oil/water separator](#)
- EPA created a fact sheet on oil-water separators (OWS), including basic procedures for handling vehicle and floor wash water, and techniques to improve OWS performance and reduce costs and liabilities.
[Oil/Water Separators 1999](#)
- For more information on holding tank regulations, see this page:
[Regulation of Industrial Wastewater Holding Tanks and Containers](#)

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Understanding OSHA Requirements for Auto Shops

The [Occupational Safety and Health Administration \(OSHA\)](#) is a Federal agency whose mission is to protect workers on the job through regulations, inspections, education, and assistance. OSHA regulates and provides guidance on topics such as personal exposure limits (PEL) to hazardous materials or chemicals, personal protective equipment (PPE), machine and electrical safety, fire prevention and contingency planning, and hazard communication. This fact sheet provides an overview of OSHA requirements and safety topics relevant to auto shops. In addition, OSHA has a [webpage](#) specifically targeting auto shop issues and regulations.

Hazard Communication: What You Need To Know

Safety Data Sheets (SDSs)

Formerly known as Material Safety Data Sheets (MSDSs), Safety Data Sheets provide information about products and chemicals such as ingredients, first aid and proper personal protective equipment (PPE). According to the Hazard Communication standard [29 CFR 1910.1200](#), all businesses must store SDSs for each hazardous chemical in the shop in a known and easily accessible location. SDSs contain valuable information about health hazards, environmental and disposal concerns, and protective measures associated with each chemical. OSHA has created a [webpage](#) that outlines the sections of an SDS.

Personal Protective Equipment (PPE): What You Need To Know

General requirements

Employers are responsible for assessing workplace hazards and identifying, providing, and training employees on the use and maintenance of PPE that corresponds to the nature of their work. ([29 CFR 1910.132](#))

Not only must employers provide appropriate PPE, but they must also enforce that it is used. If someone gets hurt on the job and was not using correct or appropriate PPE, your business may be held liable and become subject to OSHA enforcement.

Protection for eyes and face

Based on the task, workers may need protection against chemical splashes, vapors or mists, flying sparks or particles, or harmful glare ([29 CFR 1910.133](#)). Protective eyewear should fit properly and be appropriate for the work. For instance, safety goggles are not adequate protection for welders who need welding shields. OSHA outlines the eye protection rating for different tasks, including minimum shade eye protection for welders, beginning on page 11 of this [Personal Protection Equipment brochure](#).

Protection for hands

Gloves are needed for many tasks in auto shops. OSHA enforces hand protection under [29 CFR 1910.138](#). The type glove and it varies from task to task. Here are some examples of different gloves and their uses:

- Leather gloves are required for welding because they protect against sparks, heat, and sharp objects.
- Shop owners must provide their workers with appropriate gloves to protect them from solvents. Glove varieties include butyl, neoprene, or nitrile gloves and it is up to you to read the SDS for each product since these gloves do not protect against all hazardous chemicals. The University of California's Lawrence Berkeley Laboratory created a useful [guide on glove selection and chemicals](#). OSHA also has a glove resistance chart beginning on page 26 of their [PPE guide](#).
- Latex gloves are meant to be used in the health care setting, as they only protect against germs or biological hazards. In addition, latex gloves may cause an allergic, and sometimes deadly, reaction in some individuals. You should avoid using latex gloves.

Protection for hearing

The OSHA enforceable permissible exposure level over an eight-hour workday is 90 decibels (dB). The limit for 15 minutes is 115 dB ([29 CFR 1910.95](#)). If workers are exposed to a loud environment, provide earplugs or other ear protection. Note that a hearing conservation program is required whenever employee noise exposures equal or exceed 85 decibels over an eight-hour workday. OSHA has created a [guidance document](#) to assist you in setting up a hearing conservation program.

Protection for paint technicians

Auto body shops require additional skin protection (for the head, face, and arms) for paint technicians during spray painting activities to protect against chemical exposures. These include protecting all exposed skin from harm with either a chemical resistant full-body suit or other non-static discharge producing outer clothing. Also, painters should protect their head and face with a hood and goggles – all exposed skin must be protected.

Respiratory Protection: What You Need To Know

General information

Respirators protect workers lungs from hazardous airborne chemicals or particles. Employers are responsible for providing adequate respiratory protection that corresponds with the hazardous chemical exposure of the task being performed ([29 CFR 1910.134](#)). Tasks in your shop where OSHA requires that employees wear respirators include painting, sanding, welding and whenever ventilation controls and work practices are not adequate enough to reduce exposures below the PELs for particulates or chemicals ([See 29 CFR 1910, Subpart Z](#)).

Respiratory protection programs

Auto shops must develop a respiratory protection program. Respiratory protection programs include written workplace procedures, proper selection of NIOSH approved respirators, training, fit testing, inspection and maintenance, medical evaluations, work area surveillance, and provisions for clean breathing air when using supplied-air respirators.

Even when exposure levels do not exceed OSHA PELs, workers may still decide to wear respirators. In this case, a limited respiratory protection program is still required, including

proper training and fit testing, so that workers don't cause themselves harm by improperly using the respirators. The California Department of Industrial relations has created [guidance on creating a respiratory protection program](#).

The right respirator

OSHA has developed a '[Quick Card](#)' which describes different types of respirators and how they should be used. They also include respirator selection guidance beginning on page 9 of their Respiratory [Protection Brochure](#). In addition, NIOSH has created a [brochure](#) to assist businesses in respirator selection.

Fit testing and training

Fit tests and training are required annually for all those who wear tight-fitting respirators. Some fit tests and trainings may be available through some supply companies and occupational health clinics. Note that any facial hair that could interfere with the respirator seal is not permitted.

Medical evaluations

Employees who wear respirators or work in a task that requires the use of respiratory protection need to have a medical evaluation. An occupational physician or other licensed health care professional can perform medical evaluations for shops' respiratory protection programs.

Fire Prevention and Emergency Training: What You Need To Know

Fire Extinguishers

The Massachusetts Fire Prevention Regulations [527 CMR 10.02\(1\)](#) and [23.07](#) are not OSHA requirements, but are included in this fact sheet because they relate to job safety.

State fire prevention regulations mandate that all buildings required by the fire department to provide portable fire extinguishers must install and maintain them in accordance with the National Fire Protection Agency's (NFPA) [Code 10](#). Specifically, fire extinguishers must be subjected to yearly maintenance. Each fire extinguisher must have a tag or label securely attached that indicates the month and year the maintenance was performed, the identification of the person and company performing the maintenance.

Each fire extinguisher must be inspected each month to be sure that:

- It remains in its designated place.
- They are accessible and visible.
- Operating instructions are legible and fully visible.



A portable fire extinguisher with a maintenance tag

[Uploaded to Wikimedia Commons by Saperaud](#)

- Safety seals and tamper indicators are not broken or missing.
- The extinguisher feels full when lifted.
- The extinguisher is not physically damaged, corroded, leaking, or clogged,
- The pressure gauge reading or indicator is in the operable range or position, and
- The Hazardous Material Information System (HMIS) label (copy and paste this into your browser: <https://www.mica.edu/Documents/EHS/HMIS%20POSTER%20LARGE.pdf>) is in place.

Employee training

According to OSHA regulation 1910 Subpart E, employers with more than 10 employees must have both a written emergency action plan and a written fire prevention plan. Employers with 10 or fewer employees must still have emergency action and fire prevention plans, but they do not need to be in writing. This guarantees that your employees are clear on what they are and are not to do in case of a fire at your business.

[29 CFR 1910.157](#) states that if your plans included the use of portable fire extinguishers be used by employees, all employees must receive annual training on fire extinguisher use and the hazards associated with fighting the fires. If your plan does not include use of fire extinguishers, you must make sure that your employees understand they should not attempt to fight a fire and should evacuate the building, and THEN dial 911 to call the fire department.

Storage of Flammable Substances: What You Need To Know

Flammable storage cabinets

OSHA requires that chemicals be stored properly in order to prevent accidents. Flammable liquids need to be stored separately from other types of chemicals, such as those that are corrosive or highly reactive. Shops should avoid storing flammable chemicals in direct sunlight or near heat sources. 29 CFR [1910.106](#) details the regulations regarding designated and approved fireproof cabinets:

- Flammable liquid storage areas need to be labeled clearly with “FLAMMABLE - KEEP FIRE AWAY”
- No more than 60 gallons of Category 1, 2, or 3 flammable liquids and no more than 120 gallons of Category 4 flammable liquids can be stored in a fireproof cabinet.
 - Category 1 liquids have flashpoints below 73.4° F and boiling points at or below 95° F
 - Category 2 liquids have flashpoints below 73.4° F and boiling points above 95° F
 - Category 3 liquids have flashpoints at or above 73.4° F and at or below 140° F
 - Category 4 liquids have flashpoints above 140° F and at or below 199.4° F
- Metal cabinets need to be constructed with at least 18-gauge sheet iron and double walled with 1 ½ inch air space and the doorsill must be at least 2 inches above the bottom of the cabinet.

- All containers stored in the cabinet need to be labeled properly with expiration dates, contents, and manufacturer warnings.

Flammable liquids storage rooms

Shops that do painting likely have a paint storage or mixing room. These must comply with OSHA ventilation requirements. See the “Spray Painting Regulations” fact sheet. Also, OSHA flammable storage regulations 29 CFR 1910.106 refer to the requirements for electrical wiring, storage capacity, and arrangement of the chemicals.

- Electrical wiring inside storage rooms used for Category 1 and 2 flammable liquids need to be approved under the specifications for Class I, Division 2 Hazardous Locations ([29 CFR 1910.307](#) and 106).
- People need to be able to safely move in and out of the storage.
- Under [1910.106\(d\)\(5\)\(v\)](#), Table H-14 outlines on which floors flammable categories 1 through 4 may be stored.
- The storage room must be built in a way that contains spills if/when they occur, and workers should safely remove and appropriately manage leaking containers as soon as they are discovered.
- A fire extinguisher and/or other fire control device or system should be readily available in or near the room.

Worker Rights: What You Need To Know

If workers are concerned about their safety, they have the right to contact their [regional OSHA office](#) to request advice or an inspection. See this [Worker's Rights](#) page for more information.

Reporting injuries

Employers are responsible to investigate workplace injuries, determine whether or not they need to be reported to OSHA, and report those incidents. Find out reporting and record keeping requirements [here](#).

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Water-Based Brake Cleaning

Perchloroethylene (aka PCE, tetrachloroethylene, or 'perc') is a harmful chemical that can often be found in aerosol brake and parts cleaners and has been linked to cancer in humans. In addition, brakes and clutches still sometimes contain asbestos. Consider switching to a water-based (aka aqueous) brake cleaning system to help reduce worker exposure to both toxic chemicals and asbestos.

What is Water-Based Brake Cleaning?

Implementing water-based brake cleaning involves wetting the brake/clutch with a hose or spray bottle to prevent dust from getting in the air and then wiping the wet area with a damp cloth to collect all dust. You can also rent equipment that can collect all of the dust in a basin to be disposed of as hazardous waste. Both OSHA and the US EPA identify wet cleaning process as a preferred method for doing brake work. Switching to a water-based brake cleaning system will not only eliminate the use of toxic chemicals, but will reduce workers exposure to asbestos and other harmful dusts that become airborne during the brake cleaning process. If you do not choose to move to a water-based brake cleaning system, be sure to avoid aerosol cleaners that contain chlorinated solvents and/or list any of the following ingredients: perchloroethylene, PCE or 'perc', tetrachloroethylene, methylene chloride.



An aqueous brake cleaning sink

Photo courtesy of Madison Park Vocation
Technical High School

Benefits of water-based cleaning methods:

- Your water-based brake cleaning sink may be able to double as a water-based parts washing sink, further reducing the use of toxic aerosols in your shop. Purchasing one-time use aerosol cans are typically much more expensive than using an aqueous brake cleaning system.
- Water-based cleaning systems are nonflammable.
- When you reduce the use of aerosol cans, you reduce the amount of solid waste you produce as well as your solid waste disposal costs.

Using an aqueous brake cleaning system reduces worker exposure to harmful chemicals and reduces the amount of harmful VOCs that are released into the environment.

Asbestos in brakes and clutches

Many people believe that asbestos has been banned, but unfortunately it is still used in brakes and clutches. This means that it is very important that you protect your lungs during any brake job.

Sometimes you can buy new brakes or clutches that are specifically labeled as 'asbestos-free'. However, you should assume that all clutches and brakes on the cars coming into your shop, or any replacement that is not labeled as 'asbestos-free', contain asbestos. Since asbestos exposure can cause lung damage or cancer, it is important to take these measures to protect yourself:

- Try to purchase 'asbestos-free' brakes and clutches.
- Use a 'wet cleaning' method during brake and clutch jobs. This involves wetting the brake / clutch with a hose or spray bottle to prevent dust from getting in the air and then wiping the wet area with a damp cloth to collect all dust. You can also rent equipment that can collect all of the dust in a basin to be disposed of as hazardous waste.
- Protect your lungs by wearing an N-95 dust mask during all brake/clutch jobs.

It is also important that you protect yourself by NOT doing the following:

- **NEVER** use compressed air for cleaning yourself or the work area. Compressed air blows dust and asbestos into the air.
- **NEVER** clean brakes or clutches with a dry rag, brush (wet or dry), or garden hose.
- **NEVER** use an ordinary wet/dry vac without a high-efficiency particulate air (HEPA) filter to vacuum dust. Invisible particles of brake or clutch dust can stay in the air and on your clothes long after a job is complete.
- **NEVER** take work clothing inside the home or track dust through the house after performing brake and clutch work to prevent exposing your family to dust particles that may contain asbestos.

Take the Next Step

Contact the Office of Technical Assistance (OTA):

OTA's [Tiffany Skogstrom](#) (617-626-1086) and [Marina Gayl](#) (617-626-1077) have expertise in auto shop environmental safety. They can offer free and confidential assistance and advice.

Talk to your supplier

Find out if your supplier can offer or recommend a water-based brake cleaning system. Safety-Kleen, [Fountain Industries](#), [Ammcoats](#), and [Vesco Oil](#) are a few know vendors of portable water-based brake cleaning sinks.

Find Additional Information

- Follow the recommendations in US EPA's Preventing Asbestos Exposure Among Brake and Clutch Repair Workers and OSHA's bulletin on [Asbestos-Automotive Brake and Clutch Repair Work](#)

- View California's Department of Health Services on the health effects associated with aerosol cleaners:
[Aerosol Cleaner Use in Auto Repair](#)
- View Certifiably Green Denver's fact sheet that analyzes options and for brake cleaning:
[Vehicle Repair: Brake Cleaner](#)
- View the California Department of Toxics Substances Control's aqueous brake cleaning fact sheet:
[Aqueous Brake Cleaning](#)

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Water-Based Parts Cleaning

Automotive parts cleaning often involves using toxic chemicals like methylene chloride, trichloroethylene (TCE), and perchloroethylene ("perc" or PCE) or skin and lung irritants like mineral spirits. These hazardous chemicals are harmful to both human health and the environment. Shops that use these solvents to clean auto parts expose workers and the neighborhood environment to highly volatile and toxic chemicals. Consider switching to a water-based (aka aqueous) parts cleaning system to help reduce worker exposure to toxic chemicals.

Auto shops commonly use a parts washing sink containing mineral spirits or similar chemicals as well as aerosol solvents to clean hard-to-reach parts that cannot easily be removed from the engine. The quick-drying characteristics of these chemicals make them effective at cleaning, but their rapid evaporation also means that they easily get into the shop air and cause risks for workers and the environment. We recommend eliminating the use of mineral spirits or other harmful chemicals by choosing a water-based or microbial solution for your parts washing sinks. Such systems can double as a brake washing sink (See Water-Based Brake Washing fact sheet).

Microbial solutions may also be used in parts washing sinks. The microbes in the cleaner extend the life of the solution by eating oil, grease and other contaminants. The use of microbial parts washers can eliminate fluid disposal, saving you money and reducing hazardous waste costs and generation.

If you do not choose to move to a water-based or microbial cleaning system, be sure to avoid aerosol cleaners that contain chlorinated solvents and/or list any of the following ingredients: perchloroethylene, PCE or 'perc', tetrachloroethylene, methylene chloride.

Some benefits of water-based cleaning methods:

- Your water-based parts cleaning sink may be able to double as a water-based brake washing sink, further reducing the use of toxic aerosols in your shop.
- Purchasing one-time use aerosol cans are typically much more expensive than using an aqueous parts washing system.
- Water-based cleaning systems are nonflammable.
- When you reduce the use of aerosol cans, you reduce the amount of solid waste you produce as well as your solid waste disposal costs.
- Properly maintained microbial units can have longer life spans than conventional parts cleaners, resulting in shop savings in product purchasing and hazardous waste disposal costs.

Reduce repetitive purchasing costs for chemical solvents

Aqueous cleaning and microbial solutions can last as long as two to three years, with a lifespan far surpassing that of chemical solvents and one-time use aerosol cans.

Improve worker and community health

Parts cleaning with chemical solvents expose workers to high quantities of toxic chemicals that can have adverse health effects. Using an aqueous parts cleaning system will reduce worker exposure to dangerous chemicals and reduce the amount of volatile organic compounds (VOCs) released by your shop to potentially expose workers and customers.

Things to Consider

Drying time

High VOC content is the reason why solvent cleaners evaporate so quickly. Aqueous cleaning solutions have a significantly lower VOC level, and therefore may take longer to dry. Prompt drying and adding a rust inhibitor can assist in the effectiveness of using a water-based system.

Concerns about the cost of an aqueous parts cleaner

Purchasing an aqueous parts cleaning system is a capital cost that can pay for itself over time (see case study below). Once purchased, an aqueous parts cleaning system can have a payback period ranging from three months to five years. Thus, an aqueous parts cleaning system will enable long run savings due to the long lasting nature of aqueous solutions (two to three years), and the lack of hazardous waste management costs which can rise quickly, as hazardous waste is measured per pound.

Maximizing the lifespan of your aqueous or microbial cleaning solution

Maximizing the lifespan of the aqueous solution will likewise maximize the return on investment. Some common methods to maximize the lifespan of the aqueous solution include:

- Before bringing a part to the sink, pre-clean the parts to remove oil or grime with a towel or brush.
- Perform oil skimming to remove free-floating surface oil that will soil parts that you are attempting to clean.
- Filter the solution to remove solids from the solution.
- Maintain solution concentration according to the manufacturer's directions.
- Change the solution only when the performance declines rather than a scheduled basis.
- Accept fluid discoloration and do not change the solution solely because it 'looks dirty'. Parts washing liquid will often turn gray or brown, while not impacting the product performance.
- Keep all other shop chemicals away from the sink, and never dump chemicals into the sink. This will contaminate the solution.

For more methods to maximize the lifespan of aqueous solution, see [Certifiably Green Denver's Aqueous Parts Vehicle Repair Fact Sheet](#) or this [fact sheet and case study from the EPA and California's Department of Toxic Substances Control](#).

Remember that spent filters, liquids and wastes must always be handled and disposed of as hazardous wastes. Use of water-based or microbial solutions will reduce the amount of hazardous waste your shop generates, however you are responsible for disposing of all wastes properly. Water or microbial-base suppliers may dispose of all wastes as part of their service.

Asbestos

Asbestos can still be found in products such as brakes, clutches, gasket material, and heat seals. Wet cleaning methods and avoiding use of compressed air to dry parts can keep asbestos and other harmful dusts out of the shop air and help minimize worker exposure. [See more information regarding asbestos exposure and safe practices.](#)

Take the Next Step

Contact the Office of Technical Assistance (OTA):

OTA's [Tiffany Skogstrom](#) (617-626-1086) and [Marina Gayl](#) (617-626-1077) have expertise in auto shop environmental safety. They can offer free and confidential assistance and advice.

Talk to your supplier

Find out if your supplier can offer or recommend a water-based brake cleaning system. [Safety-Kleen](#), [Fountain Industries](#), [Graymills](#) and [Cintas](#) are a few know vendors of portable water-based brake cleaning sinks. [ChemFree Corporation](#), [Clean Earth Solutions](#) and [Graymills](#) supply microbial parts washing units. Some of these companies may offer you a free trial – ask them!

Find Additional Information

- See [Certifiably Green Denver's Aqueous Cleaners fact sheet](#) for maintenance tips such as extending the life of your system and servicing advice.
- For more information on the health and financial benefits of aqueous parts cleaning, as well as the risks of continued chemical solvent use, see this [fact sheet by the EPA and California's Department of Toxic Substances Control](#).
- [See this publication of the Ohio EPA, Division of Hazardous Waste Management](#) regarding cost and waste reducing aqueous parts cleaning systems.

Success Stories

Glenmoor Auto Repair (Freemont, CA): Gary Raver, owner of Glenmoor Auto Repair, purchased an aqueous spray cabinet and an aqueous microbial sink to conduct all parts cleaning in his auto repair shop. By doing this, his shop reduced cleaning labor by 80 percent, and he has realized an annual savings of \$1,638. Raver also documented a payback period on his aqueous cleaning investments of 1.8 years. See the full case study on page 7 of this [report](#).

For free and confidential technical assistance or questions, contact:
[MA Office of Technical Assistance](#) 100 Cambridge St. Suite 900, Boston, MA, 02114
Phone: 617.626.1060 Fax: 617.626.1095 E-mail: maota@state.ma.us
www.mass.gov/eea/ota/masscar

Adhesive & Lead-Free Wheel Weights

Wheel weights attached to tire rims during wheel balancing maintenance are commonly made of lead. Lead exposure can affect every organ in your body, and is most recognized for causing permanent damage to the brain. Lead wheel weights used in tire balancing at auto shops remain one of the largest ongoing uses and releases of lead into the environment in the United States. Lead wheel weights significantly contribute to lead pollution when they fall off cars and end up in storm drains or on the street. Luckily, there are readily available safer alternatives such as zinc alloy or steel.

Assume that the weights on any incoming car you service are made out of lead. Not only is it important that you protect yourself while working with lead wheel weights, but you should make an effort to collect and properly dispose of the ones that you remove from your customer's cars. This means you should always wear gloves while working with the weights and immediately wash your hands right afterward. Be sure that all wheel weights get recycled or disposed of as hazardous waste. Never dispose of a wheel weight in the trash.

We encourage you to eliminate your use of lead wheel weights by moving to adhesive non-lead wheel weights that do not pose a risk and are more likely to stay on the tires. Adhesive weights are easily dispensed and measured on a flexible adhesive tape roll, so you have the added benefit of not having various sizes of weights sitting around your shop.

Some states, including [New York](#), [Vermont](#) and [Maine](#) have passed [regulations](#) to ban the use of lead wheel weights. By eliminating your use of lead wheel weights now, you will not only be ahead of the regulatory game but you will be supplying a healthier work environment for your employees and their children, and a safer community.

Take the Next Step

Talk to a supplier

Adhesive non-lead wheel weight manufacturers include [3M](#), [BADA](#), and [Perfect Equipment](#). A list of companies that supply both lead-free adhesive and clip-on wheel weights can be found [here](#).

Contact the Office of Technical Assistance (OTA): OTA's [Tiffany Skogstrom](#) (617-626-1086) and [Marina Gay](#) (617-626-1077) have expertise in auto shop environmental safety. They can offer free and confidential assistance and advice.

Find Additional Information

- [Lead-Free Wheels](#)
- [Lead-Free Wheels 2012 Reference Materials](#) by the Ecology Center
- [Stock and Flows of Lead-Based Wheel Weights in the United States](#) by the US Geological Survey
- [National Lead-Free Wheel Weight Initiative](#) by US EPA

Success Stories

[Salcedo Auto Center](#) in Jamaica Plain, MA, successfully eliminated 83 lbs of lead from the environment by switching to lead-free adhesive wheel weights.

Nationally, [major car and tire manufacturers](#) have joined the US Environmental Protection Agency's (EPA) National Lead-Free Wheel Weight Initiative by pledging to eliminate their use of lead-wheel weight.

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www.mass.gov/eea/ota/masscar

Oil Filter Crushers

MassDEP requires that oil filters must either be drained for at least 12 hours or be handled as hazardous waste. Using an oil filter crusher improves the efficient collection of waste oil by draining spent filter oil in a matter of seconds. When using an oil filter crusher, the remaining crushed filters no longer qualify as hazardous waste and can be recycled as scrap metal. Using an oil filter crusher can turn your previous hazardous waste costs and woes into an opportunity for recycling.

How it Works

Oil filter crushers are machines that press the oil filter can under high pressure and force the oil out quickly. The spent oil is collected in a chamber for easy recycling or to be used in a waste-oil heater. The filter is crushed into a hockey-puck sized piece of metal allowing for it to be recycled rather than disposed of as hazardous waste.

The Benefits

Reduce hazardous waste pickup costs

Since MassDEP requires that un-crushed and un-drained oil filters be managed as hazardous waste, shops can reduce the volume and cost of hazardous waste pickups by crushing oil filters and recycling them as scrap metal. This has potential to turn a costly and hazardous waste into a profit. See the “Hazardous Waste Management” and “Common Hazardous Wastes” fact sheets.

Simplify tasks for your workers and save time

MassDEP requires oil filters be drained for at least 12 hours or handled as hazardous waste. Workers must simply leave the used oil filter on a rack to drain. However, it can be difficult to ensure that each oil filter is sufficiently drained. By spending less labor time monitoring proper oil filter drainage, your workers can tend to other important shop tasks.



Oil Filter Crusher, photo courtesy of [Iowa State University](https://www.iastate.edu/)

Efficiently collect fuel for your waste-oil heater

Many shops collect used oil to fuel their waste-oil heater, as it reduces the cost of heating the shop. It only takes 10 to 15 seconds for an oil filter crusher to force the remaining oil out of a used filter. Remember that all waste-oil heaters must be [registered with MassDEP](#) and follow their [guidance for safe handling of waste oil](#). See the “Waste Oil Management” fact sheet for guidance.

Things to Consider

All oil filters that areterne plated (an alloy of tin and lead), must be handled as hazardous regardless of whether they are drained for 12 or more hours or mechanically crushed. Terne plated oil filters are generally used in heavy duty vehicles, such as transit buses.

Take the Next Step

Contact the Office of Technical Assistance (OTA):

OTA's [Tiffany Skogstrom](#) (617-626-1086) and [Marina Gayl](#) (617-626-1077) have expertise in auto shop environmental safety. They can offer free and confidential assistance and advice.

Talk to your suppliers

Ask your supplier about available oil filter crushers. Oil filter crusher manufacturers include Herkules, Ranger, Magnum Force, OBERG, Vetril, FilterMatic and others. Some vendors will offer free trials of their equipment – ask them!

Get a reference

Talk to another shop owner that has successfully purchased and used an oil filter crusher. If you do not know any shops that use one, OTA (617-626-1060) may be able to connect you.

Find Additional Information

- The United States Navy has created a [fact sheet](#) outlining the environmental and economic benefits of using an oil filter crusher.
- The [Coordinating Committee for Automotive Repair](#) (CCAR) has a [webpage](#) which discusses proper ways to drain oil filter cans, including if you are using gravity draining or oil filter crushers.

Success Stories

USPS Boston Garage (Boston, MA) has been using an oil filter crusher since 2000 to simplify the task of draining and collecting the waste oil. Due to the larger nature of the vehicles, the garage processes larger oil filters than the typical auto shop. The device crushes the cans down from their original height of six inches to about 1.5 inches in height. USPS has reduced their volume of oil filter hazardous waste by approximately 60 percent. The implementation of an oil crusher has reduced hazardous waste pick-ups from three per year to only one, reducing disposal costs.

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Phone: 617.626.1060 Fax: 617.626.1095 E-mail: maota@state.ma.us

www.mass.gov/eea/ota/masscar

Antifreeze Recycling

Antifreeze (coolant) commonly contains ethylene glycol – an environmentally regulated chemical. The safer alternative, propylene glycol, is not considered toxic but can become contaminated with other regulated substances such as cadmium and chromium during use in the vehicle. Your shop can save money by investing in technology to recover and reuse antifreeze onsite or by sending antifreeze off-site to be recycled. By doing so, you can avoid both costs associated of purchasing 100 percent virgin antifreeze as well as managing used antifreeze as hazardous waste. It is important to note that use of recycled antifreeze must conform to requirements of vehicle warranties. (See also: fact sheet on “Hazardous Waste Management”).

Things to Consider

Quantities of spent antifreeze generated

Auto shops typically have three options for recycling their used antifreeze: (1) send it offsite to a recycler (2) hire a company to come to your shop to recycle your spent antifreeze onsite, or (3) purchase technology to perform in-shop recycling (aka coolant exchange systems). The most cost-effective option for your shop will depend on the amount of spent antifreeze generated, the types of vehicles serviced, and other factors such as the amount of floor space in the shop.

Warranty and liability concerns

Shops can become liable for damages or risk losing their customer's vehicle warranty if the purity and effectiveness of the antifreeze does not meet American Society for Testing Material (ASTM) standards for purity. Some shops feel that this risk is too great to ever use recycled antifreeze, however many manufacturers allow for use of recycled coolant as long as it meets ASTM standards.

Offsite recycling

Whether you hire a company to pick up your spent antifreeze or have a company recycle it onsite, recycled antifreeze must meet required ASTM standards. Recycled antifreeze product is categorized as “light duty” or “heavy duty” to indicate the types of vehicle for which it is intended. Additionally, some recyclers provide a service prescribing correct additive package(s) already blended into the base glycol product, according to shop needs. Companies that provide onsite service will remove contaminants from the spent antifreeze and then blend the additives to the finished product while in your shop. Be sure to ask about this service in case additional



A designated barrel for used antifreeze that can be picked up by the offsite recycler

Photo courtesy of Madison Park Vocational Technical High School

additives must be purchased from another supplier. To assure quality, the recycler should periodically send samples out to test labs and provide the results to you.

Even though recyclers are capable of providing a product that matches the purity of virgin antifreeze, shops are responsible for adhering to vehicle warranty requirements and must be proactive about researching the correct additive packages and obtaining evidence of testing from their recycler. Industry experts indicate that the best recyclers use ion exchange or fractional distillation (more widely-used and highly-regarded method). The ASTM standards that recyclers adhere to are:

- [ASTM 3306](#) - Standard Specification for Glycol Base Engine Coolant for Automobile and Light-Duty Service
- [ASTM 6210](#) - Standard Specification for Fully-Formulated Glycol Base Engine Coolant for Heavy-Duty Engines

Onsite recycling

In-shop antifreeze exchange and recycling (or coolant exchange) systems, are designed to remove contaminants and restore the quality of antifreeze so that it is within acceptable ranges. “Universal” units can handle varying brands and grades of antifreeze because they are equipped with interchangeable tanks. These units can test antifreeze purity and blend additives to restore effectiveness of the finished product. Some closed-loop recycling units directly attach to the vehicle to clean and replenish additives to the spent fluid before being put back in the engine.

Talk to your supplier about liability concerns and to identify the best technology for your shop. Obtain a copy of the [ASTM D6471](#) and the [ASTM D6472](#) for more specific information on the purity standards for recycled antifreeze. Note that ASTM is currently finalizing a new standard for the properties of recycled antifreeze. Your supplier may be able to share a copy with you while you consider your options.

Antifreeze Recycling: The Benefits

Reduce the need to purchase new antifreeze

Virgin antifreeze is costly. Purchasing recycled antifreeze, recycling antifreeze in-shop and/or hiring a company to recycle spent antifreeze can save you money.

Reduce hazardous waste disposal and transport costs

In Massachusetts, spent antifreeze must be managed as hazardous waste due to the high likelihood that it contains either ethylene glycol, a hazardous waste, and/or oil and heavy metal contaminants (See the “Hazardous Waste Management” fact sheet). Your hazardous waste hauler may be able to recycle antifreeze. If your shop uses enough antifreeze to warrant the purchase of an in-shop unit, it will help reduce the need, frequency, and costs for hazardous waste pick-ups.



An in-shop antifreeze recycler
Photo courtesy of Madison
Park Vocational Technical High
School

Restore the antifreeze to a usable condition

Onsite recycling services or purchasing your own unit will remove the contaminants in used antifreeze. Recycling services usually use either distillation or nanofiltration and deionization to remove contaminants. While in-shop units make use of various technologies, they generally use additives to stabilize the pH, inhibit rust, reduce water scaling, and restore the effectiveness of the antifreeze active ingredients.

Next Steps

Ask about options

Talk with your supplier or hazardous waste management company for antifreeze recycling options and coolant exchange systems. If you are interested in an in-shop unit, be sure to ask your supplier about “universal” systems that can safely handle varying types of antifreeze.

Contact the Office of Technical Assistance (OTA):

OTA's [Tiffany Skogstrom](mailto:tskogstrom@state.ma.us) (617-626-1086) and [Marina Gay](mailto:marina.gay@state.ma.us) (617-626-1077) have expertise in auto shop environmental safety. They can offer free and confidential assistance and advice.

Get a reference

MassCAR partner Madison Park Technical Vocational High School uses an antifreeze recycling service and formerly recycled their own antifreeze. For more references, contact the MA Office of Technical Assistance at 617-626-1060.

Check Warranties

Make sure that using recycled antifreeze will not void vehicle warranties. Many car manufacturers allow for use of used antifreeze as long as the product complies with the ASTM standards.

Find Additional Information

- See the Iowa Waste Reduction Center's [fact sheet on Onsite Closed-Loop Antifreeze Recycling](#).
- The California Department of Toxic Substances Control produced a [fact sheet on antifreeze recycling](#) that includes a detailed cost analysis of the benefits.

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Refrigerant Recycling Systems

All shops that provide air conditioning (A/C) services must have an EPA-approved refrigerant recovery system. If your shop does a high volume of A/C work, you might be able to save money and waste by investing in a unit that both recovers and repurposes the refrigerant for continued use.

Refrigerant recovery devices only collect refrigerant which is then transported to a recovery facility. Refrigerant recycling machines are designed to reuse the refrigerant in the same vehicle after removing moisture and contaminants. Good systems will filter out dirt. The best machines can check the system for leaks which saves your shop money by eliminating the possibility of wasting refrigerant on each job. Investing in a refrigerant recycling system can help keep your operation clean and in compliance with regulations.

The Benefits

Improve accuracy and ease when recharging refrigerant

Refrigerant recovery and recharging systems are highly accurate when recharging. The best systems also automatically weigh the refrigerant, measure and separate out oil, and check for leaks.

Reduce the need to purchase new refrigerant

Shops that do a lot of A/C work can make money during the payback period by investing in a good quality refrigerant recovery and recycling system. The average cost of one of these systems is \$3,500, so at about \$70 to recharge the refrigerant, the payback period may start as soon as several months after purchase. Even if your shop has to compensate for refrigerant lost during use of the car, the need to purchase new refrigerant will be reduced significantly.

Reduce air pollution

Because the in-shop recycling units are many times closed systems, the vapors are appropriately contained (as is required by [Section 608 of the Clean Air Act](#)) and the materials are reused, which reduces the use of virgin materials.



The front of a refrigerant recovery and recharging system (the circled refrigerant tank can be seen more completely below)

Photo courtesy of Madison Park Technical Vocational High School

Take the Next Step

Talk to a supplier

Ask a supplier about the models available for vehicle refrigerant recycling. See below for several important factors to bring up when talking to a supplier.

Get a reference

Some of the MassCAR partners make use of this technology. The MA Office of Technical Assistance (617-626-1060) can also assist you in finding information on refrigerant recycling.

Things to Consider

Different types of refrigerant

Most people regularly refer to refrigerant as “Freon,” but new formulations better meet air quality regulations concerning the global warming potential (GWP) of refrigeration chemicals. Vehicle manufacturers are given incentives to use refrigerant formulations with less GWP. A formulation called R-134a is one of the most widely used refrigerants. However, another formulation, R-1234yf (HO-1234yf), is increasingly being used.

Different formulations could affect the performance of your refrigerant recovery and recycling unit. When purchasing new equipment, be sure to raise the issue of different refrigerant formulations with your vendor. Consider the following resources:

- [Automakers' switch to new refrigerant will accelerate with EPA credits, European mandate](#) – an Automotive News article that explains R-1234yf along with a list of car models that have already switched over.
- [Substitutes in Motor Vehicle Air Conditioners](#) - a list of EPA-approved refrigerants including trade names (R-1234yf is not yet included)

The purity of the refrigerant

Attempting to recycle impure or contaminated refrigerants can damage your refrigerant recovery and recycling system. Be sure to consult with your supplier about the specific steps you should take to protect your investment, while maximizing the amount of refrigerant you recycle. Suppliers might recommend that you purchase a refrigerant identifier, which you can use to confirm the type of refrigerant found in vehicles you service. They also might provide guidelines for determining whether refrigerants contain dust, dirt, and other fluids that can harm your recycling unit.



Alternate view of the system

Photo courtesy of Madison Park Technical Vocational High School

Disposal

All refrigerant that cannot be recycled onsite must be collected and shipped to an authorized facility for reclamation. It is illegal for shops to let refrigerants evaporate or dispose of refrigerants by other means. Contact your hazardous waste pick-up company to see what their policies and procedures are concerning refrigerant or contact an [approved facility](#). [For more information about Hazardous Waste, see the fact sheet on "Hazardous Waste Management."](#)

Options for leasing and buying a recycling unit

Ask your supplier to recommend models based upon your volume of A/C work and the types of vehicles you service. Suppliers may offer recovery and recycling units for purchase or for lease. The best option for your shop will depend on the amount of refrigerant you typically encounter.

Technician training and safety

The EPA requires [Motor Vehicle Air Conditioning \(MVAC\) training](#) for all technicians who handle refrigerant. See the following section for further information on training programs. Some training programs available to Massachusetts businesses are listed below. Ask your supplier about trainings and what else technicians need to know about safely operating the machines.

Find Additional Information

- To handle refrigerants, technicians need to be trained at an [EPA Approved Technician Training Program](#).
- See the Mobile Air Conditioning Society's [Certification Training Manual](#)
- See the [ASE training program](#) for recovery and recycling of refrigerants.
- For more information, see [ASE's booklet on refrigerant recovery and recycling](#).

"We've absolutely seen payback with our model. The amount of refrigerant we have to purchase has gone down 50 percent. It's a great tool."

Paul Chaet, General Manager, Allston Collision Center

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High Voltage Safety with Hybrids and Electric Vehicles

The number of hybrid – electric and gas – and electric vehicles have been increasing on the road and in repair shops. Because of the high battery voltage, workers must be trained on how to safely service these types of vehicles. This fact sheet is intended to make it easier for mechanics to protect themselves and others while working on hybrids as well as find more information.

Things to Consider

Safety hazards

The main dangers in hybrid and electric vehicle repair are electrocution and the possibility of the car turning on accidentally while work is being performed. These serious risks make safety training a priority.

The ability of workers to recognize hybrid and electric vehicles

While some hybrids are easily recognizable, some are not necessarily distinguishable from their gas-only counterparts. A mix-up could create serious problems for workers who are not able to tell the difference.

To address safety concerns, car companies have developed certain indicators that can help workers identify the vehicles:

Color-coded high voltage cables in hybrid and electric vehicles warn of their potential danger. Usually these are orange but some models have blue cables instead. Check with the car manufacturer to identify the correct color coding.

Safety mechanisms

Many hybrid and electric vehicle manufacturers have begun installing a safety switch or mechanism to disconnect the battery from the vehicle's electrical system. The location of this will depend on the model. Check with the car manufacturer to find out about safety mechanism for each individual care model serviced in your shop.



A lithium car battery with orange indicator cables

Photo courtesy of Wikimedia Commons
author Tennen-Gas, license information:
[Attribution-ShareALike 3.0 Unported](#)

Safety best practices

Workers should avoid contact with high-voltage cables unless the high-voltage battery has been disconnected. Proper personal protective equipment (PPE) includes heavy, rubber, Class 0 rated gloves. Ordinary latex or neoprene shop gloves are NOT thick enough to protect against a high-voltage shock. Workers should inspect their gloves to make sure they do not have any pin holes, cracks, tears or splits that would allow direct contact between skin and voltage. Other precautions include:

- Turning the ignition OFF and making sure that the key or key fob is away from the vehicle before it is serviced or repaired.
- Ensuring the READY light is not on.
- Waiting 15 minutes before working on the vehicle after the battery has been disconnected.

Find Additional Information

Shop owners must provide workers who repair alternative fuel vehicles with proper safety training. See below for additional information and training resources:

- Visit the [I-CAR](#) website to register for classes on safety while working on alternative fuel vehicles safety.
- ASE offers [Light Duty Hybrid / Electric Vehicle Certification](#). The test information and overview can be found [here](#).
- SAE offers a few 2016 online [webinars](#) on hybrid vehicle repair safety.
- The [Auto Career Development Center](#) in Worcester, MA, offers classes on hybrid repair safety.

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Vacuum Sanding

Many auto shops use conventional disc sanders. The dust generated by these devices can carry toxic chemicals that get into shop air, and into the lungs of workers. Dust can also ruin fresh paint jobs. Dust waste must eventually be swept from the floor, collected, and disposed of as hazardous wastes, which costs money.

Vacuum sanders can solve these problems by removing more than 90 percent of dust generated during sanding operations. The high dust-collection efficiency greatly reduces health risks, prevents dusts from ruining refinish jobs and minimizes the need for cleanup.

There are two primary types of vacuum sanders: central vacuum systems and portable vacuum sanders. Central vacuum systems feature flexible, retractable hosing drops connected to a central vacuum system, and cost between \$5,000 and \$8,000. Portable sanders can be moved around the shop (similar to a shop-vac) and may include multiple vacuum lines that can be used simultaneously. Prices vary from several hundred to a few thousand dollars.

The Benefits

Increase worker safety

Vacuum sanders remove dust from the air that may contain [isocyanates](#) (found in all clear coats), lead, chromium, silica, and other harmful substances. These toxics can damage the lungs and nervous system and cause permanent sensitization, triggering work-related asthma. Even when using a vacuum sander, it is very important that workers wear N-95 NIOSH approved masks to protect their lungs.

Reduce cleanup costs

Vacuum sanders prevent dust from settling throughout the shop, reducing the number of labor hours that would otherwise be needed to clean it up. Shops have reported that vacuum sanders can pay for themselves in about a year due to reduced cleanup costs alone.

Better paint jobs

Vacuum sanders prevent dust from landing on and ruining fresh paint jobs. They also help reduce the amount of buffing or reworking that needs to be done in these cases.



This portable vacuum sander has two adjustable arms that allow for two workers to sand simultaneously.

Photo courtesy of Montachusett Vocational Technical School

Easier waste collection

You have no way of knowing what kind of toxic chemicals were in the original paint of the cars that roll into your garage. Paints can contain substances such as lead, cadmium and hexavalent chromium. Therefore, it is important to dispose of all sanding waste as hazardous waste. Using a vacuum sander takes the chemicals out of the air, making it a safer and cleaner working environment, and deposits it directly into the vacuum. Collecting it in a vacuum makes it easier to dispose of as hazardous waste.

Reduce spending on sandpaper

It has been reported that sandpaper in vacuum sanders needs to be replaced less frequently than sandpaper in conventional disc sanders. One facility reports that while using a vacuum sander, their sandpaper lasts 30 - 40 percent longer. Because the sandpaper is not as clogged with dust there are fewer “sanding swirls” left on the surface, resulting in a smoother and better paint job.

Take the Next Step

Talk to your supplier

Ask your supplier for suggestions of brands or types of vacuum sanders based on your shop's configuration.

Determine what type of vacuum sander will work best for your shop

Decide whether the central vacuum system or portable vacuum sanders are a better fit for your shop. If sanding occurs all over the shop, portable vacuum sanders may be best suited to the workspace. If sanding generally occurs in a few areas, it may be easier to install a central system with a few flexible hosing drops. This will make it easier for your workers to use the sanders.

Involve paint technicians in the decisions

Experienced paint technicians may not be eager to switch from conventional sanders to vacuum sanders. Shop owners should be sensitive to this perspective while emphasizing the significant benefits of this practice. OTA has interviewed numerous paint technicians who use vacuum sanders, and they unanimously agree that this technology is superior to the conventional sanders.

Get a reference

Talk to another shop owner that uses a vacuum sander. If you do not know any, contact OTA (617-626-1060) and ask for a reference.

Safety Information

Wear proper protective equipment

Look into goggles with side shields, gloves, and N-95 NIOSH approved respirators, or better. If not using a vacuum sander, dust in your shop will exceed OSHA Permissible Exposure Limits (PEL) protective equipment will be required. Using a vacuum sander will reduce the likelihood of particulate levels exceeding OSHA's PEL.

See the “Spray Painting Regulations” fact sheet for more information on the OSHA regulations for respirators.

Find Additional Information

- The California Department of Toxic Substances Control's [Sanding Waste Management fact sheet discusses best practices to protect worker and the environment, as well making sure to dispose of sanding waste as hazardous waste.](#)
- The EPA's [Vacuum Sanders: Reducing Dust and Hazardous Air Pollutants](#) fact sheet includes information about benefits, cost, and implementation.
- The Boston Public Health Commission developed a [Safe Auto Shops training video](#) featuring safety practices and health impacts from painting and sanding. Vacuum sanding appears in the video from 3:10 to 3:55.
- The Coordinating Committee for Automotive Repair (CCAR) produced a [fact sheet on the health impacts of exposure to hexavalent chromium](#), a material commonly found in coatings. It includes best practices for minimizing worker exposure while sanding, grinding, and welding.

Success Stories

"We purchased some portable vacuum sanders to keep the dust out of the air, making the shop cleaner and keeping our workers safer. Without the vacuum sanders, our workers would be covered in dust and contaminate the air throughout the shop."

Tom Ricci, Owner, Body & Paint Center

"We purchased a portable vacuum sander, which has done a fantastic job keeping the dust out of the air. Additionally, the sanding pads last noticeably longer when used with a vacuum sander compared to a traditional sander, which is certainly a money saver. More recently, we started purchasing mesh sanding pads, which have performed great."

David Lelievre, Collision repair Instructor, Montachusett Vocational Technical School

Water-Based Paint

Water-Based (aka waterborne) paints are currently being used in New England and all over the United States. Switching from solvent-based to waterborne paints can make your shop a healthier place. By avoiding solvents, you will have less toxics and flammables in your shop. Many shops in Massachusetts have already made this switch with improved paint performance.

The Benefits

Improved shop air quality

Waterborne paints emit less volatile organic compounds (VOCs), which not only result in a healthier workplace, but can also increase your compliance with state and federal regulations for air emissions. Better air quality increases worker productivity and retention and reduces sick days and incidence of chronic disease. Many shop owners say they will never work again with solvent-based paints because of the better work environment and improved paint job quality.

Improve color matching

Shop owners report improved color matching properties with waterborne paints. This is most likely due to car manufacturers' use of waterborne paints. Improved color matching means less likelihood of having to redo paint jobs.

Reduce insurance costs and flammability risk

Water-based paints are less flammable than solvent-based paints, which could reduce insurance costs. Ask your insurance company or talk to an insurance broker about reduced premiums or other benefits for reducing risks.

Increase hazardous waste and safety compliance

Waterborne paints contain lower levels of toxic chemicals which reduce the need for OSHA compliance (observing exposure limits, training and hazard communication), reduced generation of hazardous waste, and reduced risks to your community and environment.

Improve painting efficiency

Using water-based paints results in less overspray, higher transfer efficiency, and allows the use of a lower pressure spray. Less overspray saves you



A freshly painted car

Photo courtesy of Flickr, user
blastpaintrestore, license: [Creative Commons, Attribution 4.0 International](#)

money by making sure more paint gets on the car than in the air. This also increases the life of spray booth air filters while reducing worker exposure.

Easier and less toxic paint gun washing

Using waterborne paints makes gun cleaning easier, giving you the opportunity to use less toxic and less flammable gun washing solutions. Changing your gun washer to a safer alternative reduces worker exposure, and hazardous waste costs.

Take the Next Step

Talk to suppliers

Ask your supplier about their available waterborne paint lines. Many paint manufacturers currently offer waterborne paints, including [PPG](#), [BASF](#), [Axalta](#) and [Sherwin Williams](#) among others. Be sure to ask what modifications your spray booth may need to make the switch, including guns and cleaning systems. Ask suppliers for a demonstration before making any decisions – some suppliers may even offer free training to your painters.

Get a reference

Talk to another shop owner that has successfully made this switch to learn about the associated challenges and how they were overcome. If you do not know any shops that have switched to waterborne basecoats, contact OTA (617 626 1060) and ask for a reference.

Contact the Office of Technical Assistance (OTA):

OTA's [Tiffany Skogstrom](#) (617-626-1086) and [Marina Gayl](#) (617-626-1077) have expertise in auto shop environmental safety. They can offer free and confidential assistance and advice.

Things to Consider

Explore whether you can further reduce the toxicity of your paint line

Some basecoat pigments contain chromium, lead, cadmium, nickel, or manganese which are regulated under the EPA's [6H National Emission Standards for Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources](#). Paint manufacturers can provide you with a list of paint colors that contain these ingredients – the information can often be found at the manufacturer's website or inquiring by email. If you avoid paints that contain these ingredients, you will further reduce worker exposure to toxic chemicals and you can file for an exemption from the regulation. See our fact sheet on "Paint Room Regulations" for more information on this rule or contact OTA staff at 617-626-1060 for further help.

Investigate possible modifications for your spray booth

In order to ensure drying times that are comparable to solvent-borne basecoats, spray booth modifications such as retrofit blowers or heaters designed for waterborne paints may have to be installed. Many shops have been able to achieve comparable drying times with waterborne paints after making spray booth modifications.

Consider purchasing new spray guns designed for waterborne basecoats

Water and solvent-based paints have different viscosities. Different guns that work best for each type of product. Check with your paint manufacturer to ensure that you have the appropriate paint guns and lines for water-based paint. Most new guns are made to use water-based paints and have stainless internal parts to prevent corrosion. Some shops have had success with guns that use heated air, which helps the paint dry more quickly. Paint technicians may need additional training which is sometimes offered for free by the paint manufacturer, for the best results.

Find Additional Information

- EPA's [Using Waterborne Basecoats in Collision Repair Shops: A Case Study](#) presents the benefits and challenges one owner experienced when switching to water-based paints. Benefits included increased productivity from using fewer coats, increased painter retention from a cleaner environment, reduced insurance costs due to having fewer flammable paints on site, and superior color matching to solvent-based paints.
- YouTube [testimonials](#) to shop owners switching to PPG's waterborne paints line.
- YouTube [application tips](#) for PPG's waterborne paints line.

Success Stories

Cape Auto Body (Plymouth, MA) switched over to a PPG waterborne line of paints in 2008 for its better color matching and to use a more environmentally-friendly product that better protects the health of their workers. Cape Auto Body retrofitted its spray booth with enhanced air flow and driers to overcome slower drying times with the waterborne paints. Perhaps the most critical element to their success was purchasing a [Walcom Thermodry system](#) for approximately \$7,000, which heats the air traveling through the spray guns along with an air compressor and dryer (approximately \$15,000) to keep the system dry. This system has made drying times similar to or better than their previous solvent-based paint line. After six years, the shop is very happy with their decision to switch over and hasn't looked back.

"We had to tweak our spray booth modifications a bit after the switch over to waterborne paints to sustain our productivity, but we are very happy with the superior color matching. It's better for the workers and customers, and we wouldn't go back."

Kevin Gallerani, Owner, Cape Auto Body

Best Chevy Collision Shop (Hingham, MA) switched over to a [PPG ENVIROBASE®](#) waterborne line of paints in 2009. The shop retrofitted their spray booth with blowers for about \$20,000 and achieved similar productivity levels to solvent-borne paints. More recently they moved to a new location with new spray booths designed for waterborne paints, and their drying times are faster than before. They believe the color matching is superior to solvent-borne product lines, and their painters appreciate the reduced fumes.

“After learning to work with waterborne paints, I would never work at another shop that used solvent-based paints. The fumes are noticeably less, and it’s a lot easier to apply.”

Painter, Best Chevy Collision

912 Auto Center (Dorchester, MA) began using DuPont™ Cromax® Pro waterborne paints in 2008 (these coatings are now owned by Axalta). They also purchased a Herkules™ gun washing machine and use [Acrastrip®](#) water-based gun cleaning solution. The shop has been very happy with their switch to waterborne paints and water-based cleaning products. An analysis of the gun cleaning costs indicates that the shop saves more than \$3,000 per year in reduced costs of purchasing and paying for hazardous waste while disposing of thinner and solvent-based products they had formerly needed to clean their guns. [See the full case study.](#)

“I am happy with the water-based technology and am eager to show other businesses that it is possible and profitable to move toward more environmentally-friendly chemicals and technologies.”

Larry Dossantos, Owner, 912 Auto Center

Water-Based Gun Washing

Auto body shops have traditionally used solvents and paint thinner to clean their spray guns. However, using these solvents presents health risks to workers and the community. Health risks are higher for workers who are directly exposed to the chemicals while working in an enclosed space. Health impacts include irritation to the skin, eyes, and respiratory system, increased risk of cancer, reproductive issues, and potential damage to the nervous system. Solvents used to clean guns also need to be managed as hazardous waste, which costs shops money. See the “Hazardous Waste Management” and “Common Hazardous Wastes” fact sheets. A number of alternative gun-cleaning options are on the market that can make shops safer and save owners money by reducing hazardous waste.

Overview and Benefits

Water-based gun wash is a cleaning solution that is lower in toxicity and performs comparably to paint thinner and other solvents found in traditional gun washing products. Switching from a solvent-based to a water-based solution greatly improves the air quality in the shop and reduces health risks for workers and your neighborhood. The Toxics Use Reduction Institute (TURI) provides [small business grants](#) for companies that want to try new safer products but are not able to make the investment completely on their own. Also, the Massachusetts Office of Technical Assistance (OTA) can provide advice and support for making the change.

Use an Enclosed Gun Washer:

As required by Massachusetts, spray guns must be cleaned in a device that minimizes solvent evaporation during cleaning, rinsing, and draining operations; re-circulates solvent during the cleaning operation so that the solvent is reused; and collects spent solvent so that it is available for proper disposal or recycling [310 CMR 7.18(28)(g)].

These work in a system that re-circulates the solution through two filters. Instead of dissolving the paint, it lifts the paint off the gun. The same batch of solution can be reused for a long period of time before needing to be swapped out, reducing disposal costs. In most cases, it is not necessary to pre-clean the equipment before putting it in the cleaner. ***This type of solution can be successfully used to clean both solvent and water-based coatings.*** Be aware that many water-based solutions are not VOC-free although they do contain much lower levels than solvent-based solutions.

Things to Consider

Drying time

Alternative gun cleaning methods may take longer to dry equipment than solvents due to their reduced VOC levels. Therefore, shops may need to adjust their process to include drying time with compressed air to prevent corrosion of the equipment. Another option is to investigate enclosed gun washers that fully clean and dry the paint gun equipment, turning out an immediately usable paint gun when done.

Concerns about cost difference between solvents and alternatives

While safer gun cleaning chemicals may cost more per gallon to purchase, they last much longer than solvent based solutions because they evaporate more slowly than common solvents. The reduction in hazardous waste can save shops enough money to make the alternative worth the investment (see [912 Auto Center case study](#) and success story below).

Use of disposable paint gun liners

Disposable paint gun liners allow paint technicians to measure the amount of paint used for a particular paint job into a plastic cup that is then attached to the spray gun. This allows paint technicians to be more precise in their paint use, as well as giving them the ability to easily store the leftover paint for future use. The use of these products has the additional benefit of having one less part to clean on the gun and prolongs the life of whatever cleaning solution is used. Paint gun liners can be used with either water or solvent-based paints, but must always be disposed of as hazardous waste, unless proven otherwise. See the “Hazardous Waste Management” fact sheet for more information.

Take the Next Step

Contact the Office of Technical Assistance (OTA):

OTA's [Tiffany Skogstrom](#) (617-626-1086) and [Marina Gayl](#) (617-626-1077) have expertise in auto shop environmental safety. They can offer free and confidential assistance and advice.

Talk to your supplier

Many different gun washing solutions and technologies are on the market. Ask your supplier about products such as [Acrastrip from US PolyChem](#), [Safe Strip from EcoLink](#), [Vertec Bio Citrus](#) or [Vertec Bio Gold](#) from Vertec BioSolvents. These solutions can usually be used in your existing gun washing machine – ask the manufacturer for requirements and instructions. However, if you do need to purchase a new gun wash machine, look into a device that can support water-based solutions, such as those provided by [Becca](#) or [Bonny Marlin](#).

Explore funding sources

If your shop is ready to invest in a new system and would like financial assistance in purchasing an alternative gun cleaning system, contact [OTA](#) (617-626-1060) or [TURI](#) (978-934-4343) to learn more about small business grant opportunities.

Find Additional Information

- See California's Department of Toxic Substances Control [Paint Spray Gun Cleaning fact sheet](#).
- See NEWMOA's [Pollution Prevention Technology Profile: Enclosed Spray Gun Washers Using Alternative Cleaners](#) for an extensive examination of gun cleaning alternatives including several case studies.

Success Stories

912 Auto Center (Dorchester, MA) used a location change in 2007 as an opportunity to install both a water-based gun washing system and began using water-based paints. Larry Dossantos, the owner of 912 Auto Center, switched to the Axalta (formerly DuPont) [Cromax Pro](#) line of water-based paints along with [Acrastrip](#), a gun washing chemical by US Polychem. In a recent [case study](#), Dossantos describes the improved working environment brought about by both switches. He also reports that the water-based gun washer cleans much better than the old solvent system, and saves him money in product purchasing and hazardous waste disposal costs.

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www.mass.gov/eea/ota/masscar

Paint Mixing Room Guidelines and Best Practices

Even when ventilated, workers are exposed to some level of toxic chemicals while in the closed and confined area of the paint mixing room. Activities like opening and closing containers, mixing formulations, cleaning spray guns, and operating recycling units can cause chemicals to get into the air. These ongoing exposures can reduce your workers' productivity in the form of sick days and cause them to experience adverse health effects including dizziness, fatigue, irritation to the skin and lungs and even occupational asthma.

Shop owners can protect the health and wellbeing of their workers by following several best practices for paint mixing rooms. The list below describes these best practices (some of which are mandatory) and their associated benefits.

Best Practices and Benefits

Tightly seal containers when not in use

Keep harmful vapors out of the air by keeping containers tightly sealed when not in use. This practice will save you purchasing costs by keeping paints and solvents from evaporating.

Install a well-designed ventilation system

Follow [US EPA's recommendations on setting up a safe paint mixing area](#). An effective paint room ventilation set up will use both local exhaust and general ventilation to bring in fresh air from the outside, while drawing hazardous air outdoors. US EPA describes the ideal set up as having:

- Local exhaust to draw chemicals from the work area and away from the workers personal breathing zone. Local exhaust ventilation systems always consists of three basic components:
 - An exhaust vent or special duct end installed as close as possible to where work is performed and the source of hazard that ensures that vapors do not get pulled upward across the workers personal breathing zone (ideally sideways or downdraft, rather than pulling the air upward), to capture the vapors;
 - Ductwork to transport the vapors from the hood to outside the building; and
 - A fan located downstream of the hood to draw air away from the work area, through the hood and ductwork, and discharge it from the building.

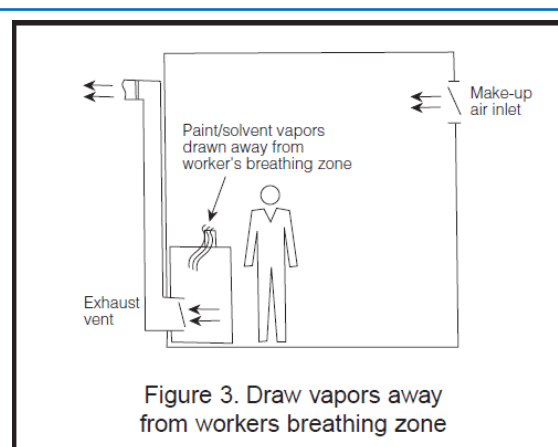


Figure 3. Draw vapors away from workers breathing zone

Courtesy of [US EPA Breathing Easy document](#)

- Make-up air that is located where it cannot push hazardous air into the workers personal breathing zone and located on the opposite side of the room than the exhaust air.
- Continuous movement of air so that there is no opportunity for chemicals to build up in the paint mixing room.
- Exhaust vents located at a low level to remove low-lying vapors.

Close the mixing room door

Closing the door prevents vapors in the mixing room from entering the rest of shop. This helps protect the health of both workers and customers.

Exhaust gun wash vapors

The Massachusetts Department of Environmental Protection (MassDEP) requires spray guns to be cleaned in devices that minimize solvent evaporation. You can improve mixing room air quality even further by installing a gun cleaner with an exhaust fan that removes vapors from the room and by ensuring that the gun cleaner maintains a tight seal whenever operating. You can also change from a solvent gun washing solution to a safer, non-flammable, and more economical alternative chemical (See Water-Based Gun Washing fact sheet).

Wear supplied air or air-purifying respirators

The use of supplied air or air-purifying respirators provide fresh air to workers while they work in the paint mixing room, reducing harmful exposure to paint and solvent vapors. Cartridge filters are allowed, but you must be vigilant to make sure that they are stored properly in a plastic bag and do not expire since cartridges have a limited lifetime. All workers must be fit tested and medically cleared for any respirator use. You are responsible for all of OSHA's requirements to reduce workplace exposures. You can see OSHA's respirator requirements and educational material and videos on creating a respiratory program [here](#).

Protect your eyes

Safety glasses protect the worker's eyes and face when pouring paints or other toxic chemicals. They also prevent workers from accidentally rubbing their eyes during mixing room operations.

Protect your skin

The use of nitrile or neoprene gloves prevents skin contact with harmful chemicals. Latex gloves are designed to protect you from germs and bacteria, but do not provide adequate protection against solvents.

Use a computerized paint mixing system

Computerized paint mixing systems help determine the exact quantities of primers, basecoats, and clear coats to mix for a given job. These systems minimize paint waste and help shops save money. Such systems help you track the total quantities of paint your shop uses, which can document your compliance with MassDEP regulations. If your shop is not already equipped with a computerized mixing system, contact your supplier or your paint manufacturer to learn what options are available.

Find Additional Information

- Follow [US EPA's recommendations on setting up a safe paint mixing area](#). An effective paint room ventilation set-up will use both local exhaust and general ventilation to bring in fresh air from the outside, while drawing hazardous air outdoors.
- See the Body Shop Business article [Your Lungs, Your Skin, Your Life](#) and the [Paint Healthy Collision Repair FAQ](#) for information on safety precautions for working with isocyanates.
- See EPA's [Best Practices for the Paint Mixing Room](#) fact sheet.

"We recognize that our painters spend quite a bit of time in the mixing room, so we do our best to ensure that the air is as clean in there as possible. We've ensured the room is properly ventilated. We use enclosed spray gun cleaners. All waste collection and containers are always capped. They have the appropriate personal protective equipment available at all times."

Molly Brodeur, Owner, Al Brodeur's Auto Body

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Safe Welding Practices

Welding fumes contain both metals (cadmium, chromium, lead, etc.) and gases (carbon monoxide, phosgene, argon, etc.) that can be harmful to workers. Welding can create highly toxic hexavalent chromium fumes that can damage the eyes, skin, throat and lungs. Long-term exposure can cause cancer, Parkinson's disease, or Manganism ("welder's disease"). Shop owners must implement safety equipment and procedure to ensure that workers can perform their jobs as safely as possible.

Important Safety and Health Practices

Your customers' lives depend on the strength of your shop's welding job. However, your workers' lives also depend on the strength of your shop's welding safety standard operating procedures and control measures. OSHA welding requirements can be found at: [OSHA 29 CFR 1910.252](#).

Provide local exhaust ventilation

Local ventilation, such as a fume extractor (see photo) will help prevent welder and worker exposure to welding fumes in your shop. This type of mechanical ventilation is the primary control for keeping concentrations of harmful fumes below OSHA's Personal Exposure Limits (PEL).

Ensure employees wear appropriate respirators

Respirators are highly recommended, regardless of PEL levels, since even exposure to small amounts of welding fumes can be very harmful over time. OSHA requires the use of respirators if ventilation does not bring air contaminant levels PEL ([OSHA 29 CFR 1910.252](#)). Choosing the correct type of respirator is based on the working specific conditions such as welding in a confined space verses welding outdoors.

For example, if the ventilation system within an auto body shop is not enough to reduce exposures below enforceable and recommended limits, an air-purifying respirator with combination cartridges including P100 filters with organic vapor protection would be appropriate. At the minimum, the welder should be wearing a P95 particle respirator or better because MIG welding, either aluminum or steel causes fumes in particle form. However, organic vapor cartridges add an element of protection from other materials, such as solvents and paints that might be present in service stations. In situations where it is impossible to provide any



This portable fume extractor features an adjustable arm that pulls welding fumes away from the welder's personal breathing zone.

Photo courtesy of Montachusett Vocational Technical School.

ventilation (e.g., welding in a confined space, such as inside a vehicle), a supplied-air respirator would be necessary to be in compliance with [OSHA 29 CFR 1910.252\(c\)\(4\)](#). The American Welding Society has a [fact sheet](#) that describes selecting appropriate respiratory protection.

OSHA requires that you have a written Respiratory Protection Program. This means that workers must be trained, fit tested and medically approved to wear respirators. Tips on how to set up a Respiratory Protection Program can be found on [page 4 of OSHA's Respiratory Protection guidance](#).

Only weld clean surfaces

Welding surfaces should be cleaned of any coating that could potentially create toxic exposure, such as solvent residue and paint. There is a danger of heating and re-releasing harmful isocyanates from painted surfaces or creating deadly phosgene gas if a surface is wet with methylene chloride. If welders are only wearing particulate respirators they will be exposed to these chemical mixtures that can lead to occupational asthma or even death.

"Welding can result in burns, eye damage, health impacts from fumes, and we want our future auto body technicians to know how to do it safely. We bought a Miller fume extractor to ensure we have proper ventilation, along with wearing a respirator with P100 filters when the extractor is not available. We also ensure our students wear the proper personal protective equipment, such as welding helmets and welding gloves, and we ensure they fully protect their skin."

David Lelievre, Collision Repair Instructor, Montachusett Regional Vocational Technical High School

Protect your skin, eyes, and hair

Long leather gloves and full clothing are recommended to protect the welder's skin from sparks and heat generated by welding. Welders should cover all remaining skin but avoid polyester fabrics, which can melt into skin when exposed to high heat. Make sure that all hair is contained in a cap or bandana. A welding helmet (required by [OSHA 29 CFR 1910.252\(b\)\(2\)\(i\)\(A\)](#)) protects the welder's eyes from the bright welding light and the face from sparks and heat.

Implement fire protection measures

Your shop is required to have a fire extinguisher available (required by [OSHA 29 CFR 1910.252\(a\)\(2\)\(ii\)](#)) for immediate use in the event that a fire breaks out. However, take the following precautions to prevent fires:

- **Be vigilant.** Watch the welding area for at least 30 minutes (required by [OSHA 29 CFR 1910.252\(a\)\(2\)\(iii\)\(B\)](#)) after welding has been completed to ensure a fire does not develop.
- **Keep the area at least 35 feet away from flammable and combustible materials** (required by [OSHA 29 CFR 1910.252\(a\)\(2\)\(iii\)\(A\)](#)) such as oily rags, paper, hazardous waste storage areas, waste oil collection areas, paint mixing rooms, and other locations with flammable liquids.

Isolate welding area from other shop activity

By enclosing welding areas or isolating them at your shop, you can prevent or minimize exposure to other workers and bystanders. One option for doing this is using a gel curtain or wall to isolate the activity and the chemicals that welding releases into the air. However, because using a curtain or other barrier to prevent the chemicals from escaping concentrates

them in a smaller area, it is very important that the welder has an appropriate respirator (see above).

Chain and cap all compressed gas cylinders

It is important that compressed gas cylinders are stored safely such that they do not leak or fall over and injure your workers (29 CFR 1910.101(b)). You can learn more about safe cylinder handling procedures by asking your gas supplier for a copy of the “Compressed Gas Association Pamphlet P-1-1965.” NIOSH also has an online checklist for compressed gases: [Compressed Gases Self-Inspection Checklist](#)

Learn more about welding aluminum

Aluminum has its own unique hazards as aluminum dust can be explosive. Therefore, ensure your technicians have received proper training specific to aluminum welding.

Find Additional Information

- I-CAR trainers are available to teach [welding technique \(including aluminum welding\) and safety](#).
- OSHA’s [Controlling Hazardous Fume and Gases During Welding](#) fact sheet explains how to control hazardous fumes and gases during welding and lists OSHA regulations that must be followed.
- The American Welding Society prepared an [automotive fact sheet bundle](#) that contains information on mechanical hazards, spot welding, grounding, and welding coated steels.
- The OSHA Training Institute developed a [Welding, Cutting, and Brazing](#) PowerPoint presentation on safe and compliant welding practices.
- For more information about the health effects related to welding, see this NIOSH page on [Welding and Manganese: Potential Neurological Effects](#).
- The Boston Public Health Commission’s Safe Shops program produced a [video](#) on permits, hazardous material storage, and welding. See 6:25 to 7:51 of video for safe welding practices.

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Solvent Recycling Systems

By using a solvent recycling unit, auto body shops can reuse spent solvent and save money on purchasing new solvent as well as hazardous waste disposal costs.

How it Works

Solvent recyclers are small units that do not take up much space. Technicians pour waste gun-wash solvent into the machine where impurities are removed from the solution. The waste is a hockey puck-size clump of dried paint and the solvent can be reused.

If your solvents or paints contain ingredients that are listed either on the [CMR 30.131 hazardous waste list](#) or the [chemical chart under CMR 30.125](#), all wastes and spent filters generated by the recycling unit must be managed as hazardous waste. The waste likely contains blends of chemicals from both solvents and paints and must be tested to determine their hazardous waste code. See the “Hazardous Waste Management” fact sheet for more information.

Benefits

Reduce purchases of thinner or solvent

Shops that use a solvent recycler have reported an 80 percent reduction in solvent purchases, which results in significant savings.

Reduce hazardous waste pickups

Shops have reported a 90 percent reduction in hazardous waste pickups once they started recycling spent solvents rather than disposing of them. The more solvent your shop recycles, the less solvent that accumulates as hazardous waste.

Recycle solvents rather than disposing of them as hazardous waste

If your shop is registered as a Small Quantity Generator (SQG), you may be able to become registered as a Very Small Quantity Generator (VSQG) by recycling spent solvents. Doing so would give you greater regulatory flexibility in managing hazardous waste and eliminate or decrease your yearly compliance fee. The fact sheet on “Hazardous Waste Management” addresses this issue in greater detail.

Take the Next Step

Talk to your supplier

Ask your supplier for suggestions on solvent recycling equipment. Some solvent recyclers are directly connected to gun cleaning equipment while others operate as standalone units and require manual transfer of the spent solvent to the recycling equipment.

Contact the Office of Technical Assistance (OTA):

OTA's [Tiffany Skogstrom](#) (617-626-1086) and [Marina Gayl](#) (617-626-1077) have expertise in auto shop environmental safety. They can offer free and confidential assistance and advice.

Get a reference

Ask other shop owners about their experiences with onsite solvent recycling systems. If you do not know any shops that are using them, contact OTA (617-626-1060) and ask for a reference.

Send a notification form to MassDEP

All shops with solvent recycling equipment must submit an [On-Site Class A Recycling Notification](#) form to MassDEP before beginning on-site recycling activities.

Track your performance

Many shops have reported significant savings in solvent purchases and hazardous waste pickups after implementing a solvent recycling system. These savings quickly make up for the cost of purchasing recycling units. OTA would like to learn from your shop's experience. Please let us know your results so that we can celebrate your success and spread the word about greener technologies.

Find Additional Information

- The California Department of Toxic Substances Control's [Solvent Recycling](#) fact sheet describes benefits, vendors, and other information.
- The Ohio Environmental Protection Agency's [On-Site Solvent Recycling Equipment](#) fact sheet presents detailed considerations about purchasing a solvent recycler. Keep in mind some of the regulatory compliance information in this fact sheet is specific to Ohio rather than Massachusetts.

Success Stories

"I must admit I was a bit skeptical that the solvent recycler would save as much as proposed. However, since purchasing the solvent recycler our waste reduction has saved us over 60 percent per year in reduced solvent purchasing and fewer hazardous waste pickups."

Tom Ricci, Owner, Body & Paint Center (Hudson, MA)

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Federal and State Auto Body Air Quality Regulations

Auto body shops are subject to regulatory requirements of the U.S. Environmental Protection Agency (EPA), the Massachusetts Department of Environmental Protection (MassDEP), and the Occupational Safety and Health Administration (OSHA). This guide provides an overview of the regulations, but it is a good idea to review the original regulations or ask the [MA Office of Technical Assistance](#) (OTA) for help to ensure that you are in compliance. Links to these regulations are provided in this document. Also, see the “Hazardous Waste Management,” “Wastewater Management,” and “Permits and Inspection Readiness” fact sheets for more information about other relevant regulatory requirements outside.

EPA’s “NESHAP 6H” Regulation

All auto body shops that spray coatings (e.g., primers, paints, clear coats) onto motor vehicles must comply with the EPA regulation entitled “National Emission Standards for Hazardous Air Pollutants; “Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources.”. This regulation, at 40 Code of Federal Regulations Part 63, Subpart HHHHHH, is often referred to as the “6H” rule. See <http://www3.epa.gov/ttn/atw/6h/6hpg.html> for more information. It applies to area sources that carry out any of these activities:

- Paint stripping operations that use methylene-chloride (MeCl)-containing paint stripping formulations;
- Spray application of coatings to motor vehicles and mobile equipment;
- Spray application of coatings to a plastic and/or metal substrate where the coatings contain compounds of chromium (Cr), lead (Pb), manganese (Mn), nickel (Ni), or cadmium (Cd).

An “area source” emits or has the potential to emit less than 10 tons per year of individual hazardous air pollutants (HAP) or 25 tons per year of combined HAP.

Your shop must meet both the 6H requirements and the related requirements of MA DEP, which are in some cases more stringent.

6H: What You Need To Know

Painter Training Documentation

All painters must be trained in spray gun equipment selection, spray techniques, maintenance, and environmental compliance. Painters must receive refresher training or recertification every 5 years. Shop owners must maintain documentation certifying that painters have received this regulation’s required training. Ask your paint manufacturer or vendor if they offer free NESHAP 6H trainings for customers. EPA has found that these training requirements are efficient pollution prevention, in that the capital cost to comply with the regulations are offset and recovered over time as a result of more efficient use of labor and materials.

Spray Booth Filter Efficiency Documentation

Under 6H, spray booths must be equipped with exhaust filters that achieve at least 98 percent collection efficiency for paint overspray. (Note: Spray applications involving less than 3 fluid ounces of material are not required to take place in a spray booth. However, it is a good practice to apply all coatings in your spray booth to eliminate any compliance questions from regulators or neighbors.) Shop owners must maintain documentation (e.g., manufacturer specifications) demonstrating that at least 98 percent filter collection efficiency is met. Spray booths used to refinish complete motor vehicles or mobile equipment must be fully enclosed and ventilated at negative pressure (or up to 0.05 inches water gauge positive pressure, for booths that have seals on all doors and other openings and an automatic pressure balancing system). Spray booths or stations used to coat miscellaneous parts or products or vehicle subassemblies must have a full roof, at least three complete walls or side curtains, and be ventilated so that air is drawn into the booth.



A vehicle spray booth

Photo courtesy of [IHS Global Spec, Royal Auto Service](#)

Spray guns

All coatings must be applied with high volume low pressure (HVLP) spray guns, electrostatic application, airless or air-assisted airless spray guns, or an equivalent technology. Paint spray gun cleaning must be done so that an atomized mist or spray of the cleaning solvent is not created outside of a container that collects used gun cleaning solvent.

Massachusetts regulations (see below) require use of enclosed spray gun cleaning machine. See the "Water-Based Gun Washing" fact sheet for information on safer and effective alternative gun wash chemicals and view this case study on how [912 Auto Center](#) saved thousands of dollars per year by switching to an EPA-approved gun wash.

Reporting

EPA requires three types of reports to be filed:

1. Initial notification – informs EPA that the facility is subject to the standards and when the source will be in compliance.
2. Notification of compliance status – certifies that the source is in compliance with the applicable requirements. New sources must certify within the initial notification,
3. Annual notification of changes report – required each calendar year any reportable changes occur.

If your shop has not yet submitted any of these 3 reports to EPA, consult [OTA for free and confidential assistance](#), or directly with the EPA about how best to comply with this requirement. New shops should notify the EPA as soon as possible. Submit your reports to: EPA Region I,

United States Environmental Protection Agency – New England, 5 Post Office Square, Suite 100 (Mail Code: OES04-2), Boston MA 02109-3912, Attn: [Air Clerk](#).

Exemptions

If you can prove that none of your coatings contain cadmium, chromium, lead, manganese, or nickel, you can [petition the EPA for an exemption from 6H](#). Many popular paint manufacturers (such as [Dupont](#), [Sherwin Williams](#), [Sikkens](#), [PPG](#)- also see PPG's '[Area Source Rule Exemption Qualifying Products List](#)' at the bottom of the page - etc.) will provide you with lists of NESHAP regulated coatings or coatings that do not contain target compounds. Ask your supplier or paint manufacturer for a list of products containing these target compounds in your coating lines, and refer to the fact sheet on "Less Toxic Alternatives" for further information on this topic.

Paint Stripping Operations

Auto shops that use methylene chloride (MeCl) must maintain records of annual usage of MeCl containing paint strippers. Paint stripping operations using methylene chloride (MeCl) must implement management practices that minimize emissions of MeCl, including:

- Evaluating the need for paint stripping (i.e., is it possible to re-coat without stripping?).
- Evaluating each application to identify potential alternative stripping methods.
- Reducing exposure of strippers to air.
- Optimizing application conditions.
- Practicing proper storage and disposal.

Even if you are exempt from NESHAP 6H, you still need to comply with the MassDEP regulations found below as well as local regulations.

Find Additional Information

- A five-minute [YouTube training](#) video and an [EPA fact sheet](#) summarize the "NESHAP 6H" requirements. The full regulation is also available [online](#).

Note that the previous text summarizes only those EPA regulations that pertain to air emissions from spray painting operations. The EPA has numerous other regulations that auto shops must comply with, most notably regulations governing management of hazardous waste and used oil (see the "Hazardous Waste Management" fact sheet) and regulations on industrial wastewater (see the "Wastewater Management" fact sheet).

For compliance assistance questions, contact: [Roy Crystal](#) at 617-918-1745 or [Susan Lancey](#) at 617-918-1656.

MassDEP Auto Refinishing Regulations

Massachusetts auto body shops are regulated by [310 CMR 7.18\(28\)](#), and apply to anyone "who owns, leases, operates, or controls an automotive refinishing facility." Regardless of whether

you are exempt from the EPA's NESHAP 6H requirements; you must also follow state regulations.

MassDEP: What You Need To Know

VOC limits

Massachusetts regulations set limits to the amount of volatile organic compounds (VOCs) that can be found in surface preparation products or coating materials. Massachusetts vendors are required to sell only VOC-compliant coatings. All components of the coat (paint, hardener, and reducer) must be mixed so that the total VOC content is less than the set limits identified below.

Table 1. Type of Surface Preparation Solution or Coating Material	VOC Limit
Surface preparation solution	1.67 lbs VOC/gal.
Pretreatment wash primer	6.5 lbs VOC/gal.
Primer or primer surface	4.8 lbs VOC/gal.
Primer sealer	4.6 lbs VOC/gal.
Topcoat (single stage or basecoat/clearcoat)	5.0 lbs VOC/gal.
Three or four-stage topcoat	5.2 lbs VOC/gal.
Specialty coating	7.0 lbs VOC/gal.

Storage and disposal

Use tightly-closed containers to store fresh and spent solvent, coatings, sludge, and rags used during surface preparation or other solvent cleaning operations. All wastes must be disposed of or recycled properly. See the "Hazardous Waste Management" fact sheet for more information.

Spray equipment

Coatings must be applied using one of the following methods:

- **HVLP spray equipment** that is operated and maintained in accordance with the manufacturer's recommendations.
- **Electrostatic application equipment** that is operated and maintained in accordance with the manufacturer's recommendations.
- **Another approved coating application method.** Approval should be obtained from MassDEP in writing.

Spray gun cleaning requirements

Spray guns must be cleaned in a device that minimizes solvent evaporation during cleaning, rinsing, and draining operations, re-circulates solvent during the cleaning operation so that the solvent is reused, and collects spent solvent so that it is available for proper disposal or recycling. This is what is commonly known as a spray gun washer. For more information, see the “Alternative Gun Washing” fact sheet.

Training requirements

All paint technicians must receive training and instruction in the proper operation and maintenance of the spray equipment and spray equipment cleaning device(s). Talk to your supplier or paint manufacturer to see if they offer training.

Recordkeeping requirements

You must maintain monthly purchase records of coatings and surface preparation products on site for three years. Some paint suppliers keep track of this on your online account, or can help you keep track of your records – ask them for this service. Records must include:

- Each coating category, coating or coating component, and surface preparation product as identified on the container.
- The quantity of each coating and surface preparation product.
- The VOC content (pounds per gallon) of each coating and surface preparation product after mixing according to the manufacturer's instructions. Safety Data Sheets (SDS) for each product will also list VOC percentages.

Note that the previous text only summarizes those MassDEP regulations that pertain to spray painting operations. Shop owners should refer to the original regulation – [310 CMR 7.18\(28\)](#) – for the full range of requirements.

OSHA Requirements for Paint Technician Safety

The OSHA requirements outlined below apply to most shops. However, this list does not include every applicable OSHA regulation. It is important to view the actual OSHA regulations to ensure you are in compliance.

Ventilation: What You Need To Know

Sanding activities

If possible, use vacuum sanders or a ventilated prep table while sanding. If exposures exceed OSHA permissible exposure limits, workers will need to wear appropriate respirators. Only use NIOSH approved N95 masks – the mask will be clearly labeled. A half-mask air purifying respirator with an appropriate particulate filter will likely provide adequate protection for sanding activities (depending on actual workplace exposures) [29 CFR 1910.134(a) and (d)(3); 29 CFR 1910 Subpart Z].

Solvent wipe-down tasks

If possible, perform wipe-down tasks in a booth or near adequate ventilation, because the ventilation will remove the solvent vapors from the air and benefit all workers. If exposures exceed OSHA permissible exposure limits, workers will need to wear appropriate respirators. A NIOSH approved N95 half-mask air purifying respirator with an organic vapor filter will likely provide adequate protection for solvent wipe-down tasks (depending on actual workplace exposures) [29 CFR 1910.134(a) and (d)(3); 29 CFR 1910 Subpart Z].

Paint mixing room

Ensure your mixing room has general exhaust ventilation to prevent solvent accumulation [29 CFR 1910.106(d)(4)(iv)]. If exposures exceed OSHA permissible exposure limits workers will need to wear appropriate respirators. A NIOSH approved N95 half-mask air purifying respirator with an organic vapor filter will likely provide adequate protection for paint mixing tasks (depending on actual workplace exposures) [29 CFR 1910.134(a) and (d)(3); 29 CFR 1910 Subpart Z].

Spray booths

OSHA has mandatory ventilation requirements for spray booths (e.g., 29 CFR 1910.94(c)(5)) but these are generally similar to the EPA requirements noted above. Shop owners must ensure that spray booths and prep stations have ventilation systems that are in good operating condition and filters are changed according to manufacturers' recommendations.

OSHA Standards require that mixing room ventilation provide

“...for a complete change of air within the room at least six times per hour.”

This can be most easily achieved with mechanical ventilation. For more information, see the “Paint Mixing Room Guidelines and Best Practices” fact sheet.

Personal Protective Equipment (PPE): What You Need To Know

Protect Your Lungs

While painting, technicians must be properly protected with loose-fitting supplied-air-respirators (SARs) or better ([assigned protection factor of at least 25](#)). Note that a higher level of protection may be needed depending on actual exposure levels [29 CFR 1910.134(a)(2)(d)(3); 29 CFR 1910 Subpart Z]. SARs provide a much higher level of protection than air-purifying respirators that use cartridges. All respirator cartridges must be stored in airtight plastic bags when not in use, as the cartridges will continue to absorb particles and chemicals that are in the air – even when not worn – and have a limited lifetime.



An example of a supplied air respirator

Photo provided by the U.S. Navy on Wikimedia Commons, Public Domain, [Photo license information on Wikimedia Commons](#)

Protect Your Skin

Nitrile or other impermeable protective gloves must be worn while sanding, performing solvent wipe downs, and working with paints and solvents [29 CFR 1910.138]. Ensure that workers also change their gloves frequently enough and avoid using torn, damaged, or leaky gloves to ensure continued skin protection. Workers must also be equipped with skin protection—examples include coveralls, a paint suit, and a headsock (unless a hooded respirator is used) [29 CFR 1910.132(a)].

Protect Your Eyes

Paint technicians must wear eye protection such as safety glasses, goggles or a hooded or full face-piece respirator when working with paints and solvents [29 CFR 1910.133(a)(1)].

Hazard Communication: What You Need To Know

Safety program requirements

You must develop and maintain the following safety programs in your auto body shop:

Written respiratory protection program

Respiratory protection programs [29 CFR 1910.134(c)] ensure that the shop only uses NIOSH-approved N95 respirators meant for that specific task [29 CFR 1910.134(d)]. The California Department of Industrial relations has created [guidance on creating a respiratory protection program](#). All respiratory programs require:

- Medical evaluations for all workers who must wear respirators.
- Annual fit tests for workers that wear tight-fitting face piece respirators.

- Confirmation that those wearing tight-fitting face piece respirators do not have facial hair that would interfere with the respirator seal.
- Appropriate filter change-out schedules for all air-purifying respirators worn in the shop

Written hazard communication program

A written hazard communication program [29 CFR 1910.1200(e)] ensures that:

- The shop has copies of safety data sheets (SDSs) for all hazardous chemicals which are easily accessible to workers at all times.
- Workers receive training on the hazards of the chemicals in their workplace. This includes informing workers about where hazardous chemicals are present, how to read product SDSs and labels, and the measures employees can take to protect themselves from hazards.

Find Additional Information

- The Massachusetts Office of Technical Assistance (OTA) [Guidance for Compliant Spray Booth Operation fact sheet](#) outlines state and local regulations. In addition, OTA staff can provide free and confidential assistance to your business. Contact [Marina Gayl](#) at 617-626-1077 or [Tiffany Skogstrom](#) at 617-626-1086.
- The Massachusetts Department of Labor Standards offers a free [OSHA consultation service](#) to help you recognize and control health and safety hazards in your workplace. However, if you fail to eliminate or control identified "serious" or "imminent danger" hazards it may result in a referral from consultation to an OSHA enforcement office. Enforcement situations are very rare, and [companies speak very highly](#) of their experience working with staff.
- The California Department of Public Health has an [Isocyanates: Working Safely fact sheet](#) that outlines risks and safety plans for auto body shops to prevent worker exposure.
- OSHA has developed an auto shop [website](#) that covers industry specific health and safety requirements.

For free and confidential technical assistance or questions, contact:
[MA Office of Technical Assistance](#) 100 Cambridge St. Suite 900, Boston, MA, 02114
 Phone: 617.626.1060 Fax: 617.626.1095 E-mail: maota@state.ma.us
www.mass.gov/eea/ota/masscar

Less Toxic Alternatives

Auto body products contain many toxic chemicals. Fortunately, manufacturers continue to research and develop less toxic alternatives, such as water-based paint and gun wash solution. Many Massachusetts auto body shops are adopting less toxic chemicals and practices that are effective in both cost and performance. These changes reduce worker exposures to toxic chemicals and can even save shops money. This fact sheet describes four specific ways that auto shops can transition to using less toxic alternatives.

Terms to Know

The following are a few terms that manufacturers, suppliers and regulatory agencies use when describing certain chemical groups:

Volatile organic compounds (VOCs)

The term VOC refers to a large class of chemicals that readily evaporate at room temperature. VOCs can be found in spray-gun cleaning solutions and other items in your shop. VOC usage in industry is closely regulated because it contributes to air pollution. Many VOCs are also toxic. Because of their quick evaporation time and ability to get into the air, formulations high in VOCs lead to higher worker exposures to toxic chemicals. Always consider using lower VOC products, since lower VOC formulations reduce workplace exposures and are less strictly regulated.



Many examples of products that can contain VOCs

Photo courtesy of Wikipedia
"Environmental Impact of Paint,"
uploaded by user Brighterorange

Hazardous air pollutants (HAPs)

HAPs are also known as "air toxics." These pollutants are chemicals that are known or suspected to cause cancer (a.k.a. a carcinogen) or can cause other serious health issues, such as being a reproductive toxin or cause birth defects.

The U.S. Environmental Protection Agency (EPA) has designated 188 chemicals as HAPs. HAPs most commonly found in auto body paints are cadmium, chromium, lead, nickel, and manganese.

Isocyanates and Diisocyanates

Currently all clear coats contain a chemical family known as diisocyanates or isocyanates. This means that you should make every effort to protect your workers through both respiratory and skin protection because [isocyanates can cause work-related asthma and chemical sensitization](#) when it is absorbed through the skin or inhaled. [The health damage is irreversible and can be fatal.](#)

Isocyanates can penetrate latex gloves without any trace of damage to the glove. Nitrile gloves provide the best barrier and should be used when working with any clear coat. In addition, supplied air respirators provide the best protection while both painting and applying clear coat.

Options for Toxics Use Reduction

Use a Safer Gun Wash solution

Shops can use water-based or less toxic cleaners instead of solvents or paint thinner to clean spray guns. These solutions work just as well to clean guns that have sprayed water or solvent-based paints and clear coat.

Water-based gun cleaning solutions have low VOC levels. Using low VOC solutions benefit the health of your employees by reducing their exposure to dangerous chemical fumes. A single five gallon pail of water-based gun cleaning solutions can be reused for several years, reducing purchasing and hazardous waste disposal costs.

The 912 Auto Center (Dorchester, Massachusetts) switched from a solvent-based cleaning approach to the Acrastrip® gun cleaning solution. An analysis of 912's gun cleaning costs shows that the shop saves more than \$3,000 per year from reduced waste and fewer purchases of the thinner and solvent-based products. [See the full case study.](#)

"I am happy with the water-based technology and am eager to show other businesses that it is possible and profitable to move toward more environmentally-friendly chemicals and technologies."

Larry Dossantos, Owner, 912 Auto Center

Use Less Toxic Prewash

Pre-wash materials used to wipe down vehicle surfaces before painting may contain harmful chemicals such as benzene, toluene, and xylene. Some shops have stopped using these more toxic formulations and replaced them with alcohol and water-based glass cleaner.

Keep in mind that VOC-content in your prewash solution must not exceed MassDEP's regulatory limits ([310 CMR 7.18\(28\)\(c\)](#)). The limit for "pretreatment wash primer" is 6.50 lbs of VOCs per gallon. You should confirm that your prewash solution meets this requirement, and your supplier should be able to identify alternatives with considerably lower VOC content.

"We've been able to use an alcohol-based surface cleaner to wipe down cars or parts prior to painting. This has worked effectively and is less toxic than a lot of the alternatives out there."

Tom Ricci, Owner, Body & Paint Center

Use “HAP-Free” Paints

Paints that contain chromium, lead, cadmium, nickel, and manganese are HAPs that are regulated by US EPA’s [NESHAP 6H](#) - “Paint Stripping and Miscellaneous Surface Coating Operations.” These can be found in metallic colors and tints of red, orange, and yellow.

All auto shops are required to [file with the EPA for NESHAP 6H compliance](#). Shops that can prove that they use “HAP-free” paint lines can file for an [exemption](#) from this regulation. Shops exempt from NESHAP 6H regulations still must comply with Massachusetts air regulations. According to the EPA, approximately 10 percent of shops that filed compliance paperwork with the EPA have already adopted “HAP-free” paints, and are therefore exempt from the EPA’s “6H NESHAP” regulation. See the “Spray Painting Regulations” fact sheet for more information.

Many popular paint manufacturers (such as [Dupont](#), [Sherwin Williams](#), [Sikkens](#), [PPG](#)- also see PPG’s ‘[Area Source Rule Exemption Qualifying Products List](#)’ at the bottom of the page - etc.) will provide you with lists of NESHAP regulated coatings or coatings that do not contain target compounds. Ask your supplier or paint manufacturer for a list of products containing these target compounds in your coating lines. Note that both water and solvent-based paints can contain HAPs.

Move from Solvent to Water-based Paints

See the “Water-based paints” fact sheet for further information about the benefits and implementation of waterborne basecoats.

Take the Next Step

Shop owners are encouraged to investigate multiple options for adopting less toxic alternatives for auto refinishing chemicals.

- Check with suppliers about their available less toxic alternatives. Be sure to ask about how alternatives might affect other aspects of your operations (e.g., your spray booth, gun cleaning, and spray gun selection). Your supplier might even provide demonstrations of new product lines and allow you to test new products on a trial basis.
- Talk to other shop owners who have successfully switched to safer alternatives to learn about benefits, performance, savings or challenges. If you do not know any shops that have implemented the changes, contact your supplier or staff at the Massachusetts Office of Technical Assistance (OTA) (617-626-1060) and ask for a reference.
- OTA is very interested in learning about your experiences using less toxic alternatives or water-based paints. If you adopt any changes listed in this fact sheet, please share your impressions with OTA. Contact [Marina Gayl](#) at 617-626-1077 or [Tiffany Skogstrom](#) at 617-626-1086.

For free and confidential technical assistance or questions, contact:
[MA Office of Technical Assistance](#) 100 Cambridge St. Suite 900, Boston, MA, 02114
Phone: 617.626.1060 Fax: 617.626.1095 E-mail: maota@state.ma.us
www.mass.gov/eea/ota/masscar